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## THE SIXTH PHILADELPHIA MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND ASSOCIATED SOCIETIES

Edited by Dr. F. R. MOULTON

PERMANENT SECRETARY

NINETY-TWO years ago, on September 20, 1848, the American Association for the Advancement of Science was organized and held its first meeting in Philadelphia. Five times since that date the association has held meetings in the place of its birth—in 1884, 1904, 1914, 1926, and 1940. With the exception of the meeting held in 1904, each of these meetings has been larger than its predecessor. A total of 1,449 addresses and papers were on the programs of the meeting of 1926, and there were 2,164 on the programs of the recent meeting, held 14 years later. This increase of 50 per cent. in papers presented has been almost paralleled by the increase in the membership of the association, from 14,366 to 21,067.

### REGISTRATION

The registration for the meeting at Philadelphia by states and foreign countries was as follows: Alabama,

21; Alaska, 1; Arizona, 2; Arkansas, 2; California, 56; Colorado, 7; Connecticut, 106; Delaware, 15; District of Columbia, 153; Florida, 22; Georgia, 20; Hawaii, 1; Illinois, 140; Indiana, 6; Iowa, 44; Kansas, 19; Kentucky, 16; Louisiana, 14; Maine, 31; Maryland, 155; Massachusetts, 226; Michigan, 75; Minnesota, 36; Mississippi, 4; Missouri, 41; Nebraska, 5; Nevada, 1; New Hampshire, 26; New Jersey, 201; New Mexico, 1; New York, 639; North Carolina, 67; North Dakota, 3; Ohio, 114; Oklahoma, 10; Oregon, 6; Pennsylvania, 664; Puerto Rico, 4; Rhode Island, 26; South Carolina, 20; Tennessee, 20; Texas, 35; Utah, 3; Vermont, 20; Virginia, 108; Washington, 2; West Virginia, 25; Wisconsin, 30; Wyoming, 1; foreign countries, 37 (Canada, 26; Canal Zone, 2; Chile, 1; Costa Rica, 1; England, 1; Guatemala, 1; New Zealand, 2; Philippine Islands, 2; Switzerland, 1), a total of 3,339. No previous meeting of the association

has had so large a registration except the meetings held in Washington in 1924 and in New York, in 1928, at which the registrations were 4,206 and 3,935, respectively. The registration at the meeting held in Columbus a year ago was 2,715.

In addition to these registrations, many members of the 53 affiliated and associated societies which met with the association registered with their own societies. Moreover, most of the scientific sessions were open to the public without any requirement of registration with the association or a participating society. The British Association for the Advancement of Science, however, requires not only registration but membership for attendance at any of its sessions, and its membership dues at normal rate of exchange are more than twice those of the American Association.

#### IRVING LANGMUIR, PRESIDENT-ELECT

Dr. Irving Langmuir, associate director of the Research Laboratory of the General Electric Company, was unanimously elected president of the association by the council at its meeting held on December 31, 1940.

It would be a waste of space to enumerate the many honorary degrees Dr. Langmuir has received from American and foreign universities, or to list the prizes and medals, including the Nobel Prize, that have been bestowed upon him in recognition of his work, or to name the scientific societies that have elected him to their memberships, for all these honors are generally known, as is proved by the fact that members of the association, in their preliminary nomination ballots, gave him an extraordinary number of votes. In electing Dr. Langmuir president the council followed its own good judgment and the clearly expressed wishes of the members of the association.

No American scientist has combined more fully the theoretical and the practical. Across many of the frontiers of science he has walked alone, and then brought leisurely back lavish gifts for all. For example, through reasoning and experiment on the incandescent electric light he designed new light bulbs that will have saved more money during his lifetime than the fabulous amount that will be spent this year on national defense. Many scientists, as well as boys, have amused themselves with soap bubbles, but it remained for Dr. Langmuir to use them as a starting point for excursions into the enchanting domain of monomolecular and multimolecular layers. This exploration promises to be, in the long run, of more value than his work on electric light, for it is an approach to an understanding of the mysterious ways in which all living cells keep up an interchange of materials with their surroundings, and thus remain alive.

Like many of the greatest scientists, Dr. Langmuir is an amateur in the high sense that he carries on his

scientific work for the sheer pleasure of learning about the universe around him. He had the good fortune to become connected with the research laboratory of the General Electric Company 31 years ago, where Dr. Willis R. Whitney had established the policy that the universe was its field and the exploring of it the recreation of its staff. There Dr. Langmuir carried out the researches that have made him world famous, and he also at times busied himself, probably with equal delight, with such things as ripples on water, little circulation currents in lakes, speed of insects in flight, films on liquids and two-dimensional gases.

Following a long line of distinguished presidents of the American Association for the Advancement of Science, Dr. Langmuir adds to the office new dignity and importance, for he assumes it rich in achievements and laden with honors, and admired as much for his rare human qualities as for his eminence as a scientist.

Since the foregoing was set in type a letter received from Dr. Dixon Ryan Fox, president of Union College, Schenectady, N. Y., contains the following tribute to Dr. Langmuir, who as honorary fellow spends a week in residence at the college each year:

We see Irving Langmuir the man, the neighbor, the citizen, the sportsman, the friend of youth, as well as the scientist. His inspiring lectures are but a part of his contribution to our life. He talks with students about their work and their sports; he introduced the "snow-train" in America; he is an enthusiastic aviator, piloting his plane for pleasure or business; he is an expert at the exciting sport of sail-skating; he is an ardent woodsman. If there were a Nobel Prize for personality, Union College would strongly urge that Dr. Langmuir should be its first recipient because of his inexhaustible friendliness and his adventurous spirit.

#### THE ASSOCIATION PRIZE AWARD

(By Charles A. Shull)

An anonymous friend of the association has provided an annual Thousand Dollar Prize Award. The eighteenth of these prizes was unanimously awarded at the meeting of the association in Philadelphia to Professor D. R. Hoagland and Dr. D. I. Arnon for investigations reported in a paper entitled "Availability of Nutrients with Special Reference to Physiological Aspects." The prize committee, consisting of Howard A. Meyerhoff (geologist), *chairman*, E. G. Butler (zoologist), Anton J. Carlson (physiologist), Thomas D. Cope (physicist) and William J. Robbins (plant physiologist), reported as follows:

As usual, the Committee on the Thousand Dollar Prize Award found a large number of excellent contributions to consider among the papers presented at the 107th meeting of the American Association for the Advancement of Science, held in Philadelphia. But there was no contribution which was so obviously outstanding that the award

could be made by acclaim. For this reason the committee can not, and does not, claim to have selected the best paper, but its members believe they have chosen a noteworthy contribution to the field of plant nutrition. They unanimously recommend that the Thousand Dollar Prize be awarded to D. R. Hoagland and D. I. Arnon, of the University of California, for their work on "Availability of Nutrients with Special Reference to Physiological Aspects."

The paper presented by these two authors is the culmination of several years of research by Dr. Hoagland and his associates, as a result of which they have shown that energy is expended by roots in the absorption of mineral nutrients from soil. The energy comes from the metabolic activity of the root. Absorption, therefore, is not a passive process of diffusion, as formerly thought, but is rather a vital biochemical function in which the root performs work.

This contribution is important not only from a fundamental theoretical standpoint, but also from a practical standpoint, especially in agriculture. It emphasizes the fact that absorption is not a static, but a dynamic process.

Professor Hoagland was born at Golden, Colorado, April 2, 1884. He was educated at Stanford University, where he obtained his A.B. degree in 1907, and at the University of Wisconsin, with an A.M. degree in 1913. His professional career began as an instructor in agricultural chemistry at California, 1907-1910. In 1910 he went to the U. S. Department of Agriculture as chemist, but was called again to the University of California in 1913 as assistant professor of agricultural chemistry. He was promoted to an associate professorship in plant nutrition in 1920, and to a professorship in 1927. He became head of the Division of Plant Nutrition in 1921, and chemist to the Experiment Station in 1925. He has served in other administrative capacities, as chairman of the department of botany, 1934-36. He is a member of the National Academy of Sciences, and was the recipient of the first Stephen Hales award of the American Society of Plant Physiologists at the Des Moines meeting, in 1929, for his contributions to the field of mineral nutrition of plants.

Dr. D. I. Arnon was born in Warsaw, Poland, November 14, 1910. He received the B.S. degree at California in 1932, and the Ph.D. degree in 1936. He has been instructor in truck crops at the University of California and junior plant physiologist in the California Agricultural Experiment Station since 1936.

Many investigators in the Division of Plant Nutrition at California have contributed to the solution of the problems of mineral nutrition, and Professor Hoagland generously suggests that the award be considered a tribute to the work of the laboratory rather than to the work of specific individuals. Dr. Arnon has expressed regret that the mere fact of his presenting at

Philadelphia the paper on the work of many investigators has given his name undue prominence.

#### RESOLUTION OF APPRECIATION

(*Unanimously passed by the Council December, 1940*)

The city of Philadelphia has played a leading part in the history of the American Association for the Advancement of Science, which was organized here in 1848. In the intervening 92 years the city has served as host for 4 of its largest and most successful scientific meetings. To this center of historical, scientific and educational achievement the Association returned for this 107th meeting with anticipations which have been justified by the outcome. In extent and completeness of facilities furnished, in number of cooperating organizations and participants, and in scope and quality of scientific programs the meeting has been an outstanding success.

The bicentennial celebration of the University of Pennsylvania was the occasion for the Association's coming to Philadelphia at this particular time. As the latest participant in a series of noteworthy gatherings and in common with many other organizations at home and abroad, the Association tenders to the University congratulations on its long record of distinguished services to science and education. The privilege of meeting in the halls of the University, of using its equipment so generously offered, and of having in the Science Exhibition valuable evidences of its activity in scientific research, has added greatly to the success of the meetings. Haverford College, Swarthmore College, Bryn Mawr College, the Wistar Institute, the Franklin Institute, the Drexel Institute of Technology, the Academy of Natural Science, the Jefferson Medical College, and many other institutions have contributed significantly to the success of the occasion. For all of these services the Association expresses its gratitude.

For providing conditions so satisfactory for a successful meeting the Association is deeply indebted to the Local Committee with its chairman, Dr. Henry Butler Allen, its secretary, Dr. W. F. G. Swann, and its other distinguished members, as well as to various active cooperating committees. They not only thoughtfully provided for every need but added many special attractions of unusual character, among which should be mentioned the reception and the Sunday afternoon tea at Convention Hall, for which arrangements were made by Mr. J. Stogdell Stokes of the Entertainment Committee, and the music by the Swarthmore Symphony Orchestra, of which Dr. W. F. G. Swann, a distinguished physicist and member of the Association, is leader. Through this resolution the Association gives formal expression of its thanks to all those who contributed to the success of the meetings and to make

permanent record of its indebtedness to the community and its citizens.

#### THE SECRETARIES CONFERENCE

(*From report by Ernest Carroll Faust, secretary*)

The Secretaries Conference was held December 29, 1940, following a complimentary dinner by the A. A. A. S. to the secretaries of the sections and affiliated societies. Otis W. Caldwell presided over a symposium discussion on "Organized Science and Democracy," which was divided into four topics: "In What Ways Has Organized Science Helped Democracy," by Leonard Carmichael; "In What Ways Has Organized Science Hindered the Development of Democracy," by Harlan T. Stetson; "Practical Steps to Improve the Contributions of Science and Democracy," by F. R. Moulton, and "Problems in the Development of an Effective Program Furthering Democracy, with Special Reference to the A. A. A. S. Sections and Society Programs," by H. H. Remmers.

Dr. Carmichael pointed out that organized science, as exemplified in the National Scientific Roster, is not only of great value to democracy in the national crisis, but will be of value in formulating new concepts of democracy along scientific lines. The faults of organized science, according to Dr. Stetson, are overspecialization, lack of cooperation between scientists and misuse of scientific discoveries. Dr. Moulton stated the chief functions of science and particularly of the American Association are to keep clear minds in a complex, disturbed world and provide an example of cooperation and integration. The main problems in developing an effective program for science, as brought out by Dr. Remmers, are the development of sound scientific methods in studying the "human sciences" that deal with man in his relation to science and society and the formulation of a clear definition of democracy as a prerequisite to scientific study of recognized social ills. An important function of the association is to acquire new knowledge in the social sciences and to disseminate scientifically validated knowledge as widely as possible. These talks were followed with active discussion by the secretaries continuing until 11 P.M. Attendance, 34.

#### THE ACADEMY CONFERENCE

(*From report by S. W. Bilsing, secretary*)

The Academy Conference held its 14th annual session December 27, 1940. Representatives of 19 of the academies of science affiliated with the A. A. A. S. and several members of the Executive Committee of the association, as well as a number of visitors from various academies of science, attended the conference.

Two formal papers were presented, the first by P. D. Strausbaugh, of the West Virginia Academy, on "Methods of Bringing the Academy into Closer Rela-

tionships with Other Organizations," and the second by W. F. Rudd, of the Virginia Academy, on "Long Range Planning for the State Academies of Science." In addition to the formal papers, informal discussions were held on a variety of subjects of importance, such as junior academies of science, the formation of collegiate sections in the academies, the status of junior academy memberships in the A. A. A. S. and the research grants given by the A. A. A. S. to the academies.

At the close of the session J. C. Gilman (Iowa Academy), chairman of the Academy Conference during the past year, introduced the incoming chairman, P. D. Strausbaugh (West Virginia Academy). V. Earl Light (Pennsylvania Academy) was elected secretary for the next quadrennium, and S. W. Bilsing (Texas Academy) was elected vice-chairman for the coming year. Attendance, 28.

#### GENERAL SESSIONS

Rarely has a meeting of the association had so many distinguished speakers for its general sessions as the one at Philadelphia. These sessions provide opportunities for scientists to turn aside for a time from their various specialties while they listen to surveys and syntheses of broad fields of science, often in relation to the problems of civilization. Since they are open to the general public they provide opportunities also for intelligent persons having widely different interests to become acquainted through authoritative sources with recent conclusions and implications of science.

The feature of the first general session was the address, on Friday evening, Dec. 27, of Dr. Walter B. Cannon, George Higginson professor of physiology in Harvard Medical School and the retiring president of the association. Dr. Cannon's distinguished address, the title of which is "The Body Physiologic and the Body Politic," was published in the Jan. 3, 1941, issue of SCIENCE. In the course of it Dr. Cannon discussed a number of important analogies between the functions and the interdependences of the myriads of organs and units of the human body and the functions and the interdependences of the constituents of human society. With great clarity he described various ways in which the human body has acquired what he calls "the wisdom of the body" during the long period of its evolution and of its constant adjustment to its environment. He then explained, with many an apt illustration and comparison, that the acquiring of corresponding wisdom in the body politic is the only sure road toward an ideal social order. He repeated a digest of his address over the national network of the Columbia Broadcasting System.

On Sunday evening, Dec. 29, Walter Lippmann, distinguished editor, author and columnist, delivered

the sixth annual lecture at meetings of the association sponsored by the United Chapters of Phi Beta Kappa. Mr. Lippmann made a sweeping indictment of modern education, stating that "it is destined, if it continues, to destroy western civilization, and is in fact destroying it."

The Research Council on Problems of Alcohol also held a general session on Sunday evening, Dec. 29, at which Dr. Thomas Parran, Surgeon-General of the U. S. Public Health Service, presided and delivered an introductory address. The principal address of the session was by Dr. Abraham Myerson, clinical professor of psychiatry in Harvard Medical School, on the subject "Alcoholism—Some Social Considerations." This program was the seventh and concluding session of a symposium on "Alcoholism" which was participated in by 44 distinguished specialists in the various aspects of the problem.

On Monday afternoon, Dec. 30, Dr. Edmund Ezra Day, distinguished economist and president of Cornell University, delivered the second annual association lecture under the sponsorship of the Honor Society of Phi Kappa Phi. Dr. Day repeated a digest of his address on the coast-to-coast red network of the National Broadcasting Company.

On Monday evening, Dec. 30, Dr. A. J. Carlson, Frank P. Hixson professor of physiology (retired) in the University of Chicago, delivered the nineteenth annual lecture under the joint auspices of the association and the Society of the Sigma Xi. The title of Dr. Carlson's address was "Science Versus Life." Dr. Edward Ellery, president of the Society of the Sigma Xi, presided.

#### STATISTICAL SUMMARY OF THE SCIENTIFIC PROGRAMS

During the six days of the meeting in Philadelphia the sections of the association and the cooperating societies meeting with the association held a total of 222 sessions for the presentation of addresses and papers. Obviously it was necessary to have many rooms simultaneously available for meetings, and to have rooms of various seating capacities and equipment. Moreover, it was highly desirable to assign rooms to various sections and societies so that the distances between related programs would be as small as possible. In order to meet as nearly as possible these conditions, 67 meeting rooms were arranged for and supplied with the necessary equipment. At times 36 sessions were being held simultaneously. The programs contained 2,164 titles of addresses and papers.

As might be expected, the requirements of equipment for these many technical programs were formidable. Four motion picture projectors were required, 48 projectors of still pictures, one beaded screen for Kodachrome slides, and 235 microscopes

with accessory lamps, transformers, etc., were requested. The total value of this equipment was of the order of \$45,000. As much as possible of it was rented from manufacturers, the Bausch and Lomb Company and the Spencer Lens Company. Fortunately some additional equipment could be rented from two local Philadelphia dealers, Street, Linder and Probert and Williams, Brown and Earle. A considerable part of the remainder was secured from the University of Pennsylvania, Bryn Mawr College, Haverford College and Swarthmore College.

There are two aspects to the problem of supplying equipment for the meetings of the association and its cooperating societies. The first is the expense. In addition to rentals on rented equipment, the association must pay insurance and transportation charges both ways. On borrowed equipment it must pay insurance and, generally, transportation costs. The total expense usually amounts to well toward \$1,000, in addition to the cost of making arrangements, keeping records and accounting. There is, however, a more serious problem, that of obtaining sufficient equipment. According to the statements of the manufacturers they do not expect to be able to rent many microscopes for several years in the future because of the heavy demands for them in connection with plans for national defense. In general, local institutions can not be expected to have enough equipment to meet the heavy demands of a meeting of the association. The only solution for the near future appears to be for each person to carry with him the microscopes and projectors he may require for presenting his demonstration or paper.

The total direct expense of the meeting in Philadelphia was about \$14,000, which was met in part by the Local Committee, in part by registration fees, in part from rentals of booths in the science exhibition and in part by appropriations from the funds of the association. The expense to which participants were put in attending the meeting was of course much greater, while the vast aggregate cost of the researches that were reported on can not be estimated.

Table 1 gives a statistical summary of the programs of all the sections and of all the cooperating societies holding sessions for the presentation of scientific papers at the meeting of the association in Philadelphia. The societies are grouped under the sections with which they are most closely related. Column (a) gives the number of sessions held both separately and jointly with other sections or societies; column (b) the number of papers presented, including demonstrations; column (c), the number of papers to be presented if time is available or to be read by title; and column (d), the estimated attendance of different persons at all sessions of the section or society. Since

TABLE 1

SECTION OR SOCIETY	(a)	(b)	(c)	(d)
<i>Section on Mathematics</i>	3	11	0	110
Association for Symbolic Logic	1	5	0	100
<i>Section on Physics</i>	1	3	0	350
American Physical Society	9	68	0	350
Am. Assoc. of Physics Teachers	6	31	0	250
American Meteorological Society	4	11	0	40
<i>Section on Chemistry</i>	4	29	0	220
<i>Section on Astronomy and the</i>				
American Astronomical Society	4	46	10	160
<i>Section on Geology and Geography and</i>				
Geological Society of America	9	71	0	325
Association of American Geographers	2	13	0	...
Philadelphia Geological Society	1	26	0	...
<i>Section on Zoological Sciences</i>	1	1	0	...
American Society of Zoologists	18	222	125	800
Am. Assoc. of Economic Entomologists	12	103	0	340
Entomological Society of America	10	71	0	250
American Society of Parasitologists	6	91	14	250
<i>Section on Botanical Sciences</i>	1	4	0	600
Botanical Society of America	22	192	0	360
American Phytopathological Society	17	141	0	350
Am. Soc. of Plant Physiologists	12	87	0	250
Mycological Society of America	5	35	0	65
Sullivan Moss Society	3	21	0	35
American Fern Society	1	4	0	...
Am. Soc. of Plant Taxonomists	4	29	0	130
American Society of Naturalists	2	5	0	600
Ecological Society of America	11	76	0	350
Genetics Society of America	6	83	16	350
Limnological Society of America	4	31	11	250
Nat. Assoc. of Biology Teachers	3	12	0	156
<i>Section on Anthropology and the</i>				
Am. Anthropological Association	11	55	0	271
American Folklore Society	1	6	0	...
<i>Section on Psychology</i>	9	51	0	300
<i>Section on Social and Econ. Sciences</i>	2	11	0	250
American Philosophical Association	1	7	0	300
Am. Philosophical Assoc., E. Division	7	22	0	...
<i>Section on Historical and Philolog. Sciences</i>	2	9	0	50
<i>Section on Engineering</i>	3	9	0	...
<i>Section on Medical Sciences</i> <sup>1</sup>	6	42	0	300
Subsection on Dentistry	2	19	0	75
Subsection on Pharmacy	2	8	0	70
Research Council on Problems of Alcohol	7	43	4	50
Institute of the Penn. Hospital	1	6	0	150
<i>Section on Agriculture</i>	1	11	0	200
Society of American Foresters	1	13	0	60
Am. Soc. for Horticultural Science	22	213	97	475
Potato Association of America	4	38	0	...
<i>Section on Education</i>	5	29	0	325
Society of the Sigma Xi	1	1	0	280
United Chapters of Phi Beta Kappa	1	1	0	650
American Science Teachers Association	3	8	0	350
American Nature Study Society	6	25	0	...
Phi Kappa Phi	1	1	0	125
Am. Assoc. of Scientific Workers	2	10	0	200
Nat. Assoc. of Science Writers	1	15	0	150

<sup>1</sup> A symposium on malaria in cooperation with the American Society of Parasitologists, American Society of Tropical Medicine and the National Malaria Committee.

joint sessions are included in the reports of each participating section and society, there are many duplications. Yet the data measure fairly the interest at the meeting in the field of each section and society. Dinners and conferences at which addresses are given are considered as scientific sessions.

## SECTION AND SOCIETY PROGRAMS

### SECTION ON MATHEMATICS (A) AND AFFILIATED SOCIETY

(From reports by E. R. Hedrick and C. A. Baylis)

At the session of Section A (E. R. Hedrick, *secretary*) on Friday morning four short technical papers were read; at the afternoon session Marston Morse, retiring vice-president for the section, delivered a formal address on "A Mathematical Theory of Equi-

librium with Applications to Minimal Surfaces" and C. G. Rossby presented a broad survey paper on "The Mathematical Problems in Meteorology." Attendance, about 110 persons. On Saturday morning the section held a joint session with the American Philosophical Association, Eastern Division, and the Association for Symbolic Logic.

The Association for Symbolic Logic (C. A. Baylis, reporting) held jointly with Section A on Saturday a meeting at which 5 papers were presented before an audience of about 100 persons. The speakers were Alfred Tarski, Frederic B. Fitch, J. C. C. McKinsey, Arthur F. Smullyan and Edmund C. Berkeley.

### SECTION ON PHYSICS (B) AND AFFILIATED SOCIETIES

(From reports by Henry A. Barton, Thomas D. Cope, Charles F. Brooks and Marsh W. White)

On Friday afternoon Section B (Henry A. Barton, *secretary*) held a joint session with the American Physical Society and the American Association of Physics Teachers, with A. L. Hughes presiding. The program consisted of an address by John Zeleny, president of the American Physical Society, on "Ions in Gases"; an address on "Higher Energies" by Ernest O. Lawrence, retiring vice-president for Section B, and an invited paper by Robley D. Evans on "Applications of Nuclear Physics." The 3 papers were related, the first tracing the development of the ion concept and effects related to it; the second describing the great cyclotron being constructed at the University of California; and the third discussing the practical applications of high-energy particles. Attendance, about 350.

The American Physical Society (Henry A. Barton, reporting) held 5 sessions, including the joint session with Section B and the American Association of Physics Teachers, at which 60 papers were presented. As usual, a number of papers were on nuclear physics, including new effects and many applications. Several papers were on physical apparatus, such as ultracentrifuges, calorimetric methods and meteorology; and 8 papers were on cosmic rays. Other papers were on x-rays and their applications, spectroscopy, biophysical researches and the structure of molecules and of matter in the solid state. A notable feature of the meeting of the society was a joint session with the Section on Geology and Geography (E) on "Some Applications of Physics to the Earth Sciences," the program of which is given below under the report of Section E. Attendance, about 350.

The American Association of Physics Teachers (Thomas D. Cope, *secretary*) held 5 sessions, including a joint session with Section B and the American Physical Society, at which 28 papers were presented.

In addition, the society held a joint session with

the American Science Teachers Association at which it presented to Robert A. Millikan the Oersted Medal for "Notable Contributions to the Teaching of Physics." Dr. Millikan was not present but sent a response entitled "Opportunities for Teachers of Physics." Steps were taken toward further cooperation with teachers in other fields, especially mathematics, chemistry and biology, looking toward a restoration of science to its rightful place in secondary education. Attendance, about 250. Officers elected: President, A. G. Worthing; vice-president, A. A. Knowlton.

The American Meteorological Society (Charles F. Brooks, *secretary*) heard 9 papers in the three sessions of its twenty-first annual meeting. President F. W. Reichelderfer, in his address on "Technical Progress and the Professional Consultant in Meteorology" showed how the requirements of industry for detailed applications of meteorology or forecasts are the growing province of the private meteorologist since they can not be met by the Federal weather service. Studies of the general atmospheric circulation in the Caribbean region, of special naval and aviation interest at present, by R. G. Stone and J. E. Miller, reveal an unexpected complexity in this semi-landlocked tropical oceanic region. Meteorology, especially wind, and anti-aircraft and chemical warfare problems were described by Captain R. J. Martin; and the Navy's rapidly expanding program in aerology, by Lieutenant Commander H. T. Orville. The contribution that soaring has made to aeronautical meteorology by observations of local air movements, especially in rough terrain, was reviewed by M. A. Garbell. At the society's banquet, W. I. Milham outlined the present interest of college students in meteorological instruction and their desire to enter meteorological work connected with national defense. Attendance, 40.

Sigma Pi Sigma Honor Physics Society (Marsh W. White, *executive secretary*) held a luncheon attended by 75 members and guests, including as guests of honor John Zeleny, president of the American Physical Society, and S. M. Sutton, president of the American Association of Physics Teachers.

#### SECTION ON CHEMISTRY (c)

(*From reports by Neil E. Gordon, secretary, and C. A. Browne*)

Section C held three sessions, two for the presentation of symposia and one for the reading of 10 general papers. The program of the first session was a symposium on organometallic compounds, George Seatchard, *chairman*. The organometallic compounds are those in which metal atoms are directly joined to carbon atoms. On this program Avery A. Morton, Edgar C. Britton, Henry Gilman, A. V. Grosse,

Charles P. Smyth, Robert A. Kehoe and George Calingaert presented papers describing the numerous uses of these compounds in theoretical investigations and as antiseptic and curative agents. At the dinner of the section Henry Gilman, retiring vice-president for the section, continued the discussion in an address on "Some Biological Applications of Organometallic Compounds."

The second symposium (C. A. Browne, reporting), a joint session of Section C and the sections on Botanical Sciences and Agriculture, under the chairmanship of C. A. Browne, was a program of 11 papers in celebration of Liebig's publication, in 1840, of his epoch-making book, "Organic Chemistry in the Applications to Agriculture and Physiology." The participants in this symposium were Burton E. Livingston, Selman A. Waksman, Henry Kraybill, Walter Thomas, Richard Bradfield, Paul E. Howe, H. B. Vickery, A. K. Balls, Harry A. Curtis and C. A. Browne. "No other teacher of chemistry ever had so many distinguished pupils as Liebig, and their promotion in various countries of agricultural experiment stations and of the principles and practices he taught spread his influence throughout the world." Each speaker stressed the continuation of his influence through succeeding generations, with specific examples of American students. One of his few remaining students who was present said, "Even if all his theories should be reduced to nothing the moral influence of his inspiring personality would never perish." Attendance, about 220.

#### SECTION ON ASTRONOMY (D) AND AMERICAN ASTRONOMICAL SOCIETY

(*From report by Dean B. McLaughlin*)

Section D and the American Astronomical Society (Dean B. McLaughlin, *secretary*) met jointly in 4 principal sessions, one of which was for the presentation of a symposium on "Intrinsic Stellar Variation," and 3 of which were for the reading of general papers. A total of 49 papers were presented and 12 were read by title. In addition, a conference was held on the teaching of astronomy.

The symposium consisted of papers by Walter S. Adams, Paul W. Merrill, Roscoe Sanford, Dean B. McLaughlin and Martin Schwarzschild and formal discussions by N. T. Bobrovnikoff and S. Chandrasekhar. The papers presented extensive observational and theoretical discussions, especially of the pulsation theory of stellar variation in brightness.

In the general programs solar system astronomy received a fair share of attention. Papers by H. R. Morgan, G. M. Clemence and F. P. Scott dealt with improvements in the tables of planetary motions and included a new value for the mass of Venus. Recent

photographs of Cunningham's Comet by L. E. Cunningham and Fletcher Watson were exhibited. Photographs of the planets in light of different wavelengths were shown by E. C. Slipher, and photographs by J. B. Edson and others of the illuminated ring of atmosphere of Venus at inferior conjunction were shown. The first quantitative results of combinations of direct photographs and radial velocities for determining space motions of prominences were presented by H. E. Sawyer, J. Brodie and O. Mohler. Other papers were concerned with such questions as the equilibrium of interstellar matter, the effects of tidal action on light curves of eclipsing binaries having eccentric orbits, and a theory of spiral structure in nebulae. At one session the retiring vice-president for Section D, Everett I. Yowell, delivered an address on "The Motions of the Stars."

A reception and tea were given the members of the section and the society at the Flower Observatory of the University of Pennsylvania by Dr. and Mrs. Olivier. The Rittenhouse Astronomical Society served refreshments after an evening demonstration at the Fels Planetarium. At the annual dinner of the society announcement was made of the award of the Annie J. Cannon Prize to Miss Julie Vinter Hansen, of the Royal Observatory of Copenhagen, Denmark. Miss Hansen has won distinction by her work on the orbits of comets. Attendance, about 160.

#### SECTION ON GEOLOGY AND GEOGRAPHY (E) AND AFFILIATED SOCIETIES

(From report by Howard A. Meyerhoff)

Section E held 9 sessions, starting on Dec. 27 and closing on Dec. 30. Approximately 325 persons attended the sessions in the course of the four days, although there was a marked turn-over in the audience as the subjects changed. But on at least three occasions there were more than 100 persons in attendance at an individual session.

In arranging the program the section enjoyed the cooperation of the Section on Physics (B), the Geological Society of America, the Association of American Geographers and the Philadelphia Geological Society.

On Friday morning, sections B and E met in a joint session to consider "Some Applications of Physics in the Earth Sciences," which was well attended by both physicists and geologists. It was unanimously agreed that the effort to acquaint the two groups of scientists with problems in both fields was worthwhile and successful.

The Philadelphia Geological Society sponsored a symposium on "Igneous Rocks of the Appalachian Mountains System" on Saturday and Sunday. A group of distinguished speakers participated in the

program, which attracted many specialists in Appalachian geology. The Sunday afternoon session on the same subject was well attended, and discussions were both enthusiastic and vigorous.

On Saturday evening, at Bryn Mawr, Kirk Bryan delivered his retiring vice-presidential address on "The Geologic Antiquity of Man in North America." A large audience was present and attended the smoker given afterward by the Department of Geology at Bryn Mawr.

On Monday the section met jointly with the Association of American Geographers for a symposium on the "Geography of National Defense." The pertinence of the papers was such as to attract attention, and this session was unquestionably the most timely of those sponsored by the geologists and geographers. Other sessions dealt with the geology of the Atlantic Coastal Plain and with recent research on Appalachian structure, stratigraphy and sub-surface water.

#### SECTION ON THE ZOOLOGICAL SCIENCES (F) AND AFFILIATED SOCIETIES

(From reports by George A. Baitsell, L. V. Domm, Ernest N. Cory, Clarence E. Mickel and O. R. McCoy)

Section F (George A. Baitsell, *secretary*) met in joint sessions with its affiliated societies. At the annual Zoologists' Dinner (attendance, 302) Leon J. Cole, retiring vice-president for Section F, delivered his vice-presidential address on "Each After His Kind."

The American Society of Zoologists (L. V. Domm, *secretary*) held its 38th annual meeting Dec. 30, 1940-Jan. 1, 1941, inclusive, joining with Section F in the annual zoologists' dinner and with the Ecological Society of America in a symposium on "Population Problems in Protozoa" and with the American Society of Naturalists, the Botanical Society of America and the American Society of Plant Physiologists in a symposium on "Experimental Control of Development and Differentiation." The meeting was noteworthy for the high character of the two symposia, the large number of papers presented (182 papers read, 40 demonstrations presented and 125 papers read by title) and the large attendance at the programs (about 800 at the regular sessions).

The first joint symposium, under the leadership of Lorande L. Woodruff, consisted of 6 papers which presented a critical and lucid survey of "Population Problems in Protozoa." The importance of the subject and the eminence of the participants (Lorande L. Woodruff, G. Evelyn Hutchinson, Richard P. Hall, Willis Johnson, W. H. Taliaferro and W. C. Allee) are proved by an attendance of nearly 1,200 persons, unquestionably the largest number ever to attend a

symposium organized by the society. For the second joint symposium see report, below, of the American Society of Naturalists.

Frederick L. Hisaw, a former president of the society, organized a symposium on the problem of "The Endocrine Control of the Mammalian Reproductive Cycle," the participants in it being Dr. Hisaw, William C. Young and Edwin B. Astwood, who together presented a critical and well-coordinated account of this very interesting, important and widely investigated problem.

The number of papers read in person was by far the largest which has ever appeared on a program of the society. The demonstration program was likewise larger than any ever before prepared by members of the society. A special feature was the silent and sound cinema program, the attendance at which was estimated at well over 400.

The following officers were elected: *President*, R. E. Coker; *vice-president*, J. P. Visscher; *member of executive committee*, Wesley R. Coe.

The American Association of Economic Entomologists (Ernest N. Cory, *secretary*) held 14 sessions, including symposia, before which 103 addresses and papers were presented. The society held a joint symposium with the Entomological Society of America on "Breeding of Cultivated Plants Resistant to Insect Attack," the participants in which were R. O. Snelling, J. H. Biggers, C. M. Packard, S. F. Bailey and R. H. Painter. The Section of Plant Quarantine and Inspection held a joint session with the American Phytopathological Society, George S. Langford presiding, at which papers were presented by the chairman, W. Howard Rankin, K. G. Parker, Donald L. Collins and R. H. Porter. An afternoon session continued with a symposium on "Plant Quarantine as Barriers to Interstate Trade" at which papers were presented by S. A. Rohwer, D. D. Mackie and Richard P. White, followed by discussions by M. S. Yoemans, T. J. Headlee and E. L. Chambers.

The Pea Aphid Conference, L. P. Ditman presiding, listened to a history of the pea aphid by W. H. White and a discussion of attitudes of canners to the pea aphid problem by Frank App and C. G. Woodbury, and an address on "Some Pitfalls of Statistical Analysis" by W. H. Kemp. The Section of Teaching, C. L. Metcalf presiding, held a symposium at which 18 teachers participated. The Section of Extension held a panel discussion on extension methods and coordination of entomology with subject-matter in other fields. The Section of Apiculture held a program of nine papers. Forty-eight papers were presented at the general sessions of the society. Attendance, about 340.

The society and the Entomological Society of America joined in the Entomologists' Dinner with an attendance of about 300.

Officers were elected as follows: *President*, J. R. Parker; *first vice-president*, Leonard Haseman.

The Entomological Society of America (Clarence E. Mickel, *secretary-treasurer*) held 5 regular sessions at which 50 papers were presented on a wide variety of subjects, including morphology, taxonomy, physiology, ecology, geographical distribution and nomenclature. Fine colored motion pictures of insects and insect-eating plants were shown at some of the sessions. Approximately 250 members of the society attended the general sessions.

A joint symposium was held with the American Association of Economic Entomologists on "The Breeding of Cultivated Plants Resistant to Insect Attack," P. N. Annand presiding. The first two speakers discussed the broad aspects of the problem, while the remainder enumerated results that had been attained with special groups of plants. Attendance, about 300.

One of the highlights of the meeting was the Annual Public Address given on Friday evening by R. E. Snodgrass on "The Evolution of the Arthropods." Dr. Snodgrass presented a theory of the phylogenetic development of the arthropods from annelid-like ancestors, of the possible development of the annelids themselves from the Coelenterates, and of the relationship between the various classes of arthropods. The lecture was followed by an informal reception tendered by the American Entomological Society to all visiting entomologists. Attendance, about 375.

An innovation was a taxonomists' conference attended by about 125 persons. A joint session was held with the Ecological Society of America, the program being equally divided between the two societies.

Officers of the society for 1941 are: *President*, W. B. Herms; *first vice-president*, A. C. Baker; *second vice-president*, R. H. Painter; *secretary-treasurer*, Clarence E. Mickel.

The American Society of Parasitologists (O. R. McCoy, *secretary*) held its 16th annual meeting, David H. Wenrich presiding as president. The program contained 91 titles representing the fields of protozoology, helminthology and medical entomology. In addition, the society was one of the joint sponsors of the symposium on Human Malaria, arranged under the auspices of Section N, to which many members contributed.

The opening session on Monday was devoted largely to papers in the field of veterinary parasitology, while in the afternoon, medical parasitology was the chief topic of discussion. Papers by J. Allen Scott on "Schistosomiasis in Venezuela" and by Quentin M. Geiman on "Leishmania brasiliensis" emphasized some of the unusual public health problems that are to be encountered in the Caribbean territory where the United States is preparing to establish defense bases.

Papers on protozoology were presented at the Tues-

day morning session, at the conclusion of which the presidential address on "The Morphology of Some Protozoan Parasites in Relation to Microtechnique" was delivered by David H. Wenrich. Tuesday noon the annual Parasitologists' Luncheon was attended by 158 members and guests, the largest attendance in the history of the society. In the afternoon 31 papers were presented in a demonstration program during which tea was served. The concluding sessions on Wednesday were devoted to papers on helminthology with emphasis on trematode life history studies, a field in which rapid progress has been made in recent years. Total attendance, about 250.

The following officers were elected for 1941: *President*, James E. Ackert; *vice-president*, Justin Andrews; *treasurer, for two years*, Lloyd E. Rozeboom; *members of the council*, to serve four years, Donald L. Augustine and Norman R. Stoll; *members of the editorial board*, to serve four years, Richard P. Hall, E. Harold Hinman and Justus F. Mueller.

#### SECTION ON BOTANICAL SCIENCES (G) AND AFFILIATED SOCIETIES

(*From reports by John T. Buchholz, Paul R. Burkholder, Edwin M. Betts, Henry N. Andrews, Jr., John M. Fogg, Jr., J. A. Pinckard, W. E. Loomis, J. N. Couch, Paul D. Voth, H. A. Gleason and R. M. Tryon, Jr.*)

The Section on Botanical Sciences met in joint session with the Botanical Society of America, the American Phytopathological Society, the American Society of Plant Physiologists, the Mycological Society of America, the Sullivant Moss Society and the American Fern Society, with an attendance of about 600. The president of the American Phytopathological Society, Charles Chupp, presided in the absence of M. L. Fernald, vice-president for the section. The program consisted of the address of the retiring vice-president for the section, Neil E. Stevens, on "Botanical Research by Unfashionable Technics." This address was followed by three invitation addresses: A. S. Foster on "Comparative Studies on the Structure of the Shoot Apex in Seed Plants"; Wm. A. Albrecht on "Plant and the Exchangeable Calcium of the Soil"; and O. L. Inman on "Chlorophyll as a Part of the Photosynthetic Mechanism." The address of Dr. Albrecht featured also the rôle of colloidal clays in providing an enormous absorption surface for ions. Attendance about 600.

The Botanical Society of America (Paul R. Burkholder, *secretary*; Edwin M. Betts, Henry N. Andrews, Jr., and John M. Fogg, Jr., *secretaries of sections of the society*) held its 35th annual meeting from Dec. 28, 1940, to Jan. 1, 1941, with its program organized under its four sections. The number of papers pre-

sented in regular sessions of the society was 148. A number of joint sessions were held by cooperation of some of the sections with other plant science organizations. The annual dinner for all botanists was held on Tuesday evening with an attendance of 370. Edgar Nelson Transeau, president of the Botanical Society of America, presided at the dinner and introduced Karl M. Wiegand, retiring president, who spoke on "Fifty Years of Taxonomic Botany in America."

The following are the officers of the Botanical Society of America, Inc., for 1941: *President*, J. T. Buchholz; *vice-president*, S. F. Trelease; *secretary*, Paul R. Burkholder; *treasurer*, Paul Weatherwax.

The General Section of the society held 5 sessions, at which 60 papers were presented on a variety of subjects. The average attendance was about 150. More than one third of the papers were devoted to phases of plant anatomy. In a report on the developmental pattern and cell constitution of the stem in dwarfed maize, the action of the gene  $d_1$  in reducing plant stature was attributed primarily to its effect on the ribermistem and reduced elongation of the internodal parenchyma cells. The origin of vascular rays in the cambium of conifers and other woody plants and the general structure of phloem cells in 126 species of monocots were reported. Zonal structure of the large dome-shaped shoot apex of *Dioon edule* was of special interest.

The method of division in vacuolate plant cells was described in some detail. In early prophase cytoplasmic strands tend to become aggregated into a more or less continuous diaphragm occupying the position where the division wall will later be laid down. The first evidence of the polarity of cells is provided by their cytoplasmic configuration. Studies on cellulose fibril formation in the chloroplasts of marine algae showed that cellulose fibrils or particles are discharged from the plastids and subsequently deposited in a state of precise orientation in the cell wall.

Other contributions were on cytology and morphology, including papers on various aspects of polyploidy. Two authors described the use of periclinal chimeras with various combinations of 2n, 4n and 8n components in studying initiation and development of the leaf and floral organs in *Datura*.

Officers of the General Section of the society for 1941 are: *Chairman*, E. F. Castetter; *secretary*, Edwin M. Betts.

The Paleobotanical Section of the society met for 3 half-day sessions for the presentation of technical papers, a discussion of nomenclature and demonstration of certain modern techniques and fossil specimens. Eleven papers were presented and about 35 persons attended the three sessions.

Bridging the fields of botany and geology, two

speakers described the fossils in certain Illinois and Ohio coals. A large collection of Upper Cretaceous coniferous woods from the Delaware-Chesapeake canal were discussed and comparisons were made with living species of pine and spruce. Some fossil ferns from the Upper Cretaceous in Wyoming and the living and extinct plants of the Creede Valley, Colorado, were described. A review of the factors influencing migration of floras of western North America during the climatic changes of Tertiary times was one of the highlights of the meeting.

Officers of the Paleobotanical Section for 1941 are: *Chairman*, R. W. Chaney; *secretary*, H. N. Andrews, Jr.

The Physiological Section of the society held 5 regular sessions at which 39 papers were presented. The average attendance was about 75. A joint session was held with the American Phytopathological Society and the American Society of Plant Physiologists for presentation of 12 papers on physiological and pathological topics. A symposium on "Present Concepts of Ion Availability in Plant Nutrition" was held in conjunction with the American Society for Horticultural Science and the American Society of Plant Physiologists.

Important papers were presented on photosynthesis and other effects of radiation upon fungi and green plants, respiration, mineral nutrition, dormancy, correlation phenomena, vitamins B<sub>1</sub>, B<sub>2</sub> and C, plant chemistry and plant growth substances. Four authors reported on results of auxin extraction with different solvents, the remarkable influence of heat treatment on increasing the auxin yield and the use of proteolytic enzymes to accelerate the liberation of auxin in extractions. Induction of polyploidy in bean plants by treatment with lanolin paste containing 0.25 per cent. naphthalene acetic acid was an interesting contribution. The production of pseudo-embryos from the tissue around the embryo sac in *Datura* as a result of auxin treatment was reported in a joint paper by 3 authors.

In a study of tuberization in Jerusalem artichokes under the influence of short days it was found that any green tissues can act as loci for photoperiodic perception. Inhibition of photosynthesis in a green alga by means of zinc, copper and cobalt gave new evidence for the activity of these trace elements. The significance of fluorescence in theoretical studies of photosynthesis was discussed. Two papers were presented on the influence of radiation of low intensity on cell behavior in the first internode of oat seedlings. Studies on the lethal effects of ultra-violet radiation on bacteria and a dermatophyte were presented.

In several papers on respiration evidences were given for the presence of cytochrome oxidase in wheat embryos; that below about 18° C. only the cyamide-

insensitive system functions in oat coleoptiles; and that there is a close relationship between oxygen respiration and freezable water as the grain of wheat and rye grows and matures. Experiments were described in which a high percentage of rooting was obtained in cuttings of Norway spruce and eastern white pine planted in December and January.

In the field of plant chemistry it was shown that the alkaloid solanine occurs in highest concentration in tissues of the potato plant where metabolic activity is greatest, and that it concentrates more in the tops of plants grown under long days.

A report on the effects of a long list of organic compounds on cell division in the pollen tube of *Tradescantia* was of interest. Thiamin production in younger portions of maize in proportion to nitrogen supply was reported by 2 workers, and another described experiments showing that girdling a tomato stem inhibits passage of thiamin from the green shoot downward to the roots. Papers by three authors discussed the possible roles of vitamins B<sub>2</sub> and C in protein synthesis.

The officers of the Physiological Section for 1941 are: *Chairman*, B. S. Meyer; *vice-chairman*, A. E. Hitchcock; *secretary-treasurer*, D. B. Anderson.

At the 5 sessions of the Systematic Section, attended by about 100 persons, 32 papers were presented on a variety of topics. The historical development of a woodland climax in western North America and the mechanics of movement of vegetation were described by several speakers. A study of local floras of the United States revealed that of the 3,072 counties, only about 205 (8 per cent. of the area) are covered by fairly detailed treatises on local vegetation. Reports were presented on special groups of plants in certain localities, including diatoms, nut pines, mustards, certain aquatics, citrus species. New plants reported are: *Cistus argenteus*, a new species of *Lathyrus*, a new member of *Leavenworthia*, a new *Dryopteris* hybrid and *Quercus Ogelthorpeana*.

Officers of the Systematic Section for 1941 are: *Chairman*, D. M. Moore; *secretary*, W. H. Camp.

The American Phytopathological Society (J. A. Pinckard, reporting) held its 32d annual meeting from Dec. 27 to Dec. 31, 1940. Arranging its program in sections, it held 12 sessions in addition to special conferences, round-table discussions and dinners. In the 12 sessions 132 papers were presented, 63 in regular sessions, 24 in special demonstrations, and 45 in joint sessions with other societies. In addition, 9 special conferences were held by groups of scientists engaged in cooperative work of a regional or national nature.

A conference on crop losses caused by plant diseases and their distribution was called by collaborators of the Division of Mycology and Plant Disease Survey

of the U. S. Department of Agriculture. To assist with these objectives, the preparation of a check list of host plants, with their diseases and known distribution, is being assembled from the cumulative records of the survey.

Of special interest to plant pathologists engaged in reporting crop losses was the address entitled "Botanical Research by Unfashionable Techniques" by Neil E. Stevens, who argued effectively for reporting disease-loss estimates in terms of numerical values. Illustrations of the confusion likely to result from a more "cautious" approach to these estimates by purely descriptive terminology were offered. The speaker believes that over a period of years the errors inherent in plant-disease-loss estimates would be leveled into relative insignificance compared with those of descriptive reporting.

At the annual meeting of the society last year at Columbus, Ohio, a committee on Coordination in Cereal and Vegetable Seed Treatment Research was organized for the purpose of relieving confusion existing among the numerous methods and materials used in the prevention of seedling diseases. A round-table conference under the leadership of Harold T. Cook brought to light how, during the past year, 18 states conducted 31 uniform tests of the efficacy of red copper oxide, zinc oxide and Semesan on beets, cabbage, cucumbers, peas, spinach and tomatoes.

Pathologists met to compare experiences with the use of eradicate fungicides, designed to destroy the overwintering stage of the apple-scab fungus. Groups of plant pathologists representing the tobacco-producing area met in informal discussion of the baffling wild-fire and angular-leaf-spot diseases. While no conclusions could be reached regarding the prevention and control of these diseases, tentative plans were laid for the Tobacco Disease Council to make a summer visit for group observation and study of the tobacco leaf-spot diseases in Maryland and Pennsylvania.

Better undergraduate training for future plant pathologists was the subject of a lively round-table conference, headed by J. G. Leach, which proved to be one of the major highlights of the meeting, with practically the entire discussion emanating spontaneously from young speakers who, by adhering to basic principles of science and democracy, paved the way for a better understanding of student needs. It was voted by the group to continue the conference next year and to include discussion of graduate training.

At a joint session with the Potato Association of America, the society heard extensive discussion at the symposium on potato ring rot. State extension and research specialists cooperating with the Department of Agriculture and seed-certification officials from 14 states conferred on the progress made in their respective fields.

The largest gathering of the society occurred Saturday evening when 326 members and friends attended the phytopathologists' dinner.

Twenty-six exhibits at the Sunday afternoon invitation program of demonstrations showed the work that had been done by various members of the society and was attended by more persons than could obtain entrance into the exhibit hall at one time. This was planned and conducted by a demonstration committee with A. J. Riker, *chairman*.

The society held a joint session with the American Association of Economic Entomologists to hear 6 papers, 4 of which were devoted to plant quarantines and inspection.

In the session on fruit diseases a report was heard on a leaf spot of Chinese sand pears in Louisiana which was found to overwinter on dead leaves. Reports on superior copper sprays for cherry leaf spots in West Virginia and New York, a new disease of peaches and the mode of overwintering of peach bacterial spot indicated important new developments in the field of fruit-disease pathology.

In the session of vegetable diseases, the society heard about the transit rot of tomatoes, methods of spraying for controlling the early-blight diseases, resistant varieties of beans, new non-metallic fungicides for pea root-rot, the use of boron on garden beets, possible weed hosts for lettuce shot hole, as well as various diseases of celery, onion and cabbage. Varieties of wheat resistant to the loose smut disease and large-scale methods of treating the seed were described before the society in one of the Saturday morning sessions. Several diseases of the American elm were discussed at the session of forest pathology. At a joint session with the floriculture section of the American Society for Horticultural Science, diseases of camellia, lilies, holly, carnations, gardenias and lawn grasses were discussed.

Growth-promoting substances in plants, the destruction of pathogenicity of bacterial plant pathogens by amino acids, the relation of alkaloids to southern root-rot, the isolation of fungicidal compounds in root bark of citrus and several other important papers of a physiological nature were presented in another joint session with the Botanical Society of America and the American Society of Plant Physiologists.

Officers elected for 1941 are: *President*, J. G. Leach; *vice-president*, Lee M. Hutchins; *secretary*, R. S. Kirby; *councilor*, J. G. Horsfall; *treasurer*, H. A. Edson; *editor-in-chief*, H. B. Humphrey. Attendance, about 375.

The American Society of Plant Physiologists (W. E. Loomis, *secretary-treasurer*) held its 17th meeting with the largest attendance of members in its history and the largest number of papers on its program. Highlights of the program were the symposium on

"Structure of Protoplasm," under the chairmanship of William Seifriz, and the joint symposium on "Present Concepts of Ion Availability in Plant Nutrition," Richard Bradfield, chairman. In the protoplasm symposium, Laurence S. Moyer discussed proteins and protoplasmic structure and Charles W. Hock the structure of the cell wall; G. W. Searth and C. L. Huskins spoke on the structural differentiation of the cytoplasm and the nucleus, respectively; O. L. Sponsler discussed the molecular aspects of protoplasm, and Warren H. Lewis showed motion pictures of mitosis in tissue cultures. In the second session Douglas A. Marsland, Noburo Kamiya and William Seifriz concluded the program with a series of papers on protoplasmic streaming.

At the joint symposium with the American Society for Horticultural Science and the Physiological Section of the Botanical Society of America, D. R. Hoagland and D. I. Arnon of the University of California at Berkeley presented the paper on availability of plant nutrients which was awarded the A. A. A. S. one thousand dollar prize. John W. Shive discussed the balance of ions and oxygen tension in nutrient substrates; Michael Peech, the availability of ions in light sandy soil as affected by pH; O. C. Magistad spoke on ion and plant relationships in western arid soils, and W. A. Albrecht on soil organic matter and ion availability.

C. O. Appleman presided at the symposium on "Teaching Plant Physiology," and E. M. Palmquist, David R. Goddard and H. C. Sampson led the discussion. Twelve papers on plant diseases and disease resistance were presented before a joint session with the American Phytopathological Society and the Physiological Section of the Botanical Society of America. Seven papers on protoplasm and growth were presented at a general session, and 11 papers on irradiation and photosynthesis. Twelve papers on growth and reproduction and 10 on plant-soil relationships were presented before two sectional meetings, and 9 on water relations and hardiness.

A total of 182 persons attended the annual dinner when the retiring president, John W. Shive, delivered a combined presidential-Stephen Hales Prize address on "Significant Roles of Trace Elements in the Nutrition of Plants." The elections of Professor Dr. P. Boysen Jensen of Copenhagen to a corresponding membership and of Professor Emeritus William F. Ganong of Smith College to a Charles Reid Barnes Honorary Life Membership were announced.

The biennial Stephen Hales Prize was awarded to Philip R. White, of the Rockefeller Institute, for his work on plant tissue culture.

The Mycological Society of America (J. N. Couch, *secretary*) held three sessions at which 24 papers were presented, a joint session with the Section on Botan-

ical Sciences and its affiliated societies for the address of the retiring vice-president of the section and three invited papers, and a joint session with the American Phytopathological Society. Attendance, about 65. Officers for 1941 are: *President*, E. A. Bessey; *vice-president*, W. N. Snell; *secretary-treasurer*, J. N. Couch.

The Sullivant Moss Society (Paul D. Voth, *secretary*) held two sessions at which 17 papers were presented on the taxonomy, geography, morphology and physiology of liverworts, mosses and lichens. Every major region of the United States, as well as Puerto Rico and local areas in Mexico, were reported upon taxonomically. The mechanism for spore dispersal and the germination of spores in mosses were critically discussed. Mineral nutrition in liverworts was demonstrated with living material and discussed. The annual moss foray will probably be scheduled for early September in eastern Kentucky. Attendance, about 35.

Officers of the society for 1941 are: *President*, H. L. Blomquist; *vice-president*, H. S. Conard; *secretary-treasurer*, Paul D. Voth.

The American Fern Society (R. M. Tryon, Jr., reporting) held a session at which Joseph Ewan presented a paper on the "Sources of the Fern Flora of Colorado" and introduced the new category "Stratospheric" to designate a group of species, such as *Asplenium Adiantum-nigrum* and *Adiantum Capillus-veneris*, that have arrived in the state from great distances by means of spore transportation by the upper currents of the air. Other papers presented critical observations on habitat preferences, ecological relations and noteworthy variations of ferns. Notes on the culture of ferns and other subjects were exchanged by members following the formal meeting.

The American Society of Plant Taxonomists (H. A. Gleason, reporting) held a joint session with the Systematic Section of the Botanical Society of America at which 10 papers were presented. About 130 persons attended the annual dinner of the society at which Liberty Hyde Bailey, retiring president, delivered a vigorously constructive address on nomenclature. Officers for 1941 are: *President*, LeRoy Abrams; *secretary-treasurer*, Norman C. Fassett; *member of council for 7 years*, William R. Maxon.

#### SOCIETIES RELATED TO THE SECTION ON ZOOLOGICAL SCIENCES (F) AND THE SECTION ON BOTANICAL SCIENCES (G)

(From reports by Ralph E. Cleland, W. J. Hamilton, Jr., E. W. Lindstrom, J. E. Ackert, Paul S. Welch, P. K. Houdek and George W. Hunter, III)

The American Society of Naturalists (Ralph E. Cleland, *secretary*) held one joint session for the

presentation of a symposium, the Annual Naturalists' dinner and sponsored the Biologists' Smoker in co-operation with the A. A. A. S. and affiliated societies. Although attendance at the smoker was restricted to those who had registered for the meeting, a very large crowd of at least 1,500 was present.

The annual symposium on "Experimental Control of Development and Differentiation" was presented in joint session with the American Society of Zoolo-gists, the Botanical Society of America, the Genetics Society of America and the American Society of Plant Physiologists. G. W. Beadle and E. L. Tatum discussed the "Genetic Control of Developmental Reactions," showing particularly how the genes act in the production of eye color pigments in *Drosophila*. A. F. Blakeslee considered the "Effect of Induced Polyploidy in Plants," describing the results of colchicine and other treatments in *Datura* and *Melandrium*. B. H. Willier spoke on "An Analysis of Feather Color Pattern Produced by Grafting Melanophores During Early Embryonic Development," giving his very interesting results obtained in experiments on the chick. K. V. Thimann took as his subject "Hormones and the Control of Development in Plants," giving a comprehensive picture of the way in which auxins control growth and differentiation. The symposium was attended by about 600 persons. At the Naturalists' Dinner, with 91 persons attending, the presidential address was delivered by J. H. Bodine on "The Cell—Some Aspects of its Functional Ontogeny," a clear presentation of results obtained by the speaker and his students in the experimental control and analysis of growth and development in the grasshopper egg.

The Ecological Society of America (W. J. Hamilton, Jr., *secretary*) held its 26th meeting consisting of 11 sessions devoted to plant, animal and human ecology at which 89 papers were presented. Among them were joint sessions with the Society of American Foresters, the Limnological Society of America, the Entomological Society of America and the American Society of Zoologists. A joint symposium on "Human Ecology" was held with the Section on Social and Economic Sciences (K) at which four papers were presented, the authors being F. H. Pike, J. Russell Smith, Bruce L. Melvin and E. C. Lindemann. Spirited discussions were led by Chas. C. Adams, *chairman*. Following the Saturday evening banquet, which more than 100 attended, the retiring president, Francis Ramaley, gave an illustrated lecture on the plant life of Colorado.

On Monday afternoon a joint symposium on "Population Problems in Protozoa" was held with the American Society of Zoologists, Lorande L. Woodruff presiding. The speakers were G. Evelyn Hutchinson, Richard P. Hall, Willis Johnson, W. H.

Taliaferro and W. C. Allee. Attendance at separate and joint sessions, about 350. At the final business meeting of the society Alfred E. Emerson of the University of Chicago was elected president.

The Genetics Society of America (E. W. Lindstrom, *secretary*) presented a three-day program consisting of two demonstration sessions (53 exhibits), one invitation-paper program of 6 papers, one short-paper session with 16 papers and two joint symposia. Highlights of the demonstrations were the *Drosophila* speciation studies, particularly those by the University of Texas workers, and the investigations on induced polyploidy. The invitation-program papers were presented by A. F. Blakeslee, A. G. Avery, R. E. Clausen, H. E. Fischer, P. T. Ives, T. S. Painter and H. J. Muller. The joint symposium on "Theoretical and Practical Aspects of Polyploidy in Crop-Plants," organized by B. R. Nebel, consisted of 4 main papers, each followed by a planned discussion. So many aspects of polyploidy were covered by the 8 speakers in the symposium that the only generalization possible is that generalizations in the polyploid problem at this stage are not warranted. Disturbing factors, such as the previous genetic history of the parental diploid forms (self- or cross-fertilization), the balance between endosperm and embryo, and unknown agencies operate to influence the fertility of polyploid derivatives. Attendance at symposium, about 300; attendance at invitation program, 290; attendance at demonstrations, about 350; attendance at luncheon, 195.

After the conclusion of the annual Genetics Society luncheon the following items of business were completed: (1) the 1941 summer meeting was assigned to the Carnegie Institution group at Cold Spring Harbor for the end of August; (2) tentative recommendations for the 1941 winter meeting included programs at both Dallas and Providence, R. I. (provided the other biological groups will meet there), and (3) the election of the following officers for 1941: *President*, T. Dobzhansky; *vice-president*, E. W. Lindstrom; *secretary-treasurer*, B. F. Kaufmann.

The American Microscopical Society (J. E. Ackert, *secretary*) met Dec. 30, 1940. At the executive committee luncheon, which was attended by four past presidents and most of the officers, reports were presented which showed the society to be in a thriving condition. During the year 533 pages of original biological material were published in the *Quarterly Transactions* with the aid of several grants from the Spencer-Tolles Fund, a society endowment amounting to over \$20,000.

The society voted to meet in 1941 at Dallas, Texas, with the American Association for the Advancement of Science and named Secretary J. E. Ackert and

Treasurer A. M. Chickering as representatives on the council of the association.

The following officers were elected for 1941: *President*, Raymond J. Pool; *first vice-president*, T. C. Nelson; *second vice-president*, E. P. Cheatum; *treasurer* (three years), A. M. Chickering; *elective member to the Executive Committee* (three years), Harold Kirby.

The Limnological Society of America (Paul S. Welch, *secretary-treasurer*) at its 6th annual meeting held 4 half-day sessions, the last of which was followed by the annual business meeting. Papers in the first half-day program included contributions to such subjects as lake sedimentation, density currents, turbidity and light penetration, food chain dynamics, oxygen investigations and limnology of Florida lakes. The second half-day session was conducted as a joint meeting with the Ecological Society of America. Papers dealt with various subjects of common interest to members of the two societies, such as bacterial populations in natural waters, alpine lakes, theories of phytoplankton periodicity, industrial pollution, influence of water circulation on plankton populations and experimental work on rainbow trout. This program included a motion picture film representing certain types of research activities on board the vessel *Atlantis*, of the Woods Hole Oceanographic Institute. At the same meeting J. G. Needham presented an illustrated account of the ecological situation in Santo Domingo.

The third half-day program was devoted to new developments in research methods in limnology, such as new apparatus for sampling lake sediment, statistical features of plankton collection, new apparatus for determining light penetration in water and new equipment for measuring subsurface temperature. This session included also, by special invitation, the presentation by George L. Clarke of a significant new photographic method for the study of organisms and condition of the sea bottom. Another paper in this program presented results of the study of crushing strength of biological films on natural waters and the spreading of larvicidal oils. The final half-day program included papers dealing with the growth and reproductive rates of rotifers, effects of distillery wastes on plankton, ecological distribution of mayflies and relation of certain fishes to mosquito control.

The officers for 1941 are: *President*, Raymond C. Osburn; *vice-president*, Willis L. Tressler; *elective member of executive committee*, H. B. Hungerford.

The National Association of Biology Teachers (P. K. Houdek, *secretary-treasurer*), at its third annual convention, held two scientific sessions at which 16 papers were presented, and a dinner at which C. C. Little delivered an address on "The Place of Biology

in Democracy." A total of 131 members and visitors from 21 states and representing 10 affiliated local societies registered at the convention. The papers were concerned with various problems related to the teaching of biology. Oscar Riddle presented a large amount of information in a paper entitled "An Inventory and Accounting Just Rendered by 3,200 Teachers of High School Biology (partial results from a questionnaire)." The annual dinner of the society was attended by 95 members and friends. A spirit of cordiality and enthusiasm pervaded the convention, and the members were greatly pleased with the arrangements made by the Delaware Valley Biologists Club, which was host to the meeting.

The Union of American Biological Societies (George W. Hunter, III, *secretary*), as sponsor for *Biological Abstracts*, received a detailed report from John E. Flynn, editor-in-chief, G. W. Hunter, III, president of the board, and A. J. Carlson, chairman of the Committee on Financial Support. It was stated that *Biological Abstracts* finished 1940 with a deficit of about \$2,600 on Volume 14, a considerable reduction from the deficit of the previous year. This deficit, which was reduced by the sale of back volumes to about \$1,100, was remarkably small in view of the loss of nearly \$4,800 in subscriptions largely attributable to the war.

The Union approved a plan for fostering amicable relationships with other American republics, through the purchase of a complete set of back volumes of *Biological Abstracts* (including a subscription to the current volume) by any interested society or individual for the sum of \$100, and sending it as a gift from the purchasing society to a non-subscribing institution in some other American republic. It was believed that such a gift would foster genuine friendship between American republics.

It was voted that the Union of American Biological Societies serve as a depository for funds (or books) for the National Central Library of China, which is sadly in need of American dollars for the purchase of books in this country.

Oscar Riddle, as chairman of the Committee on Biological Science Teaching, submitted a report on "The Impressions and Facts Obtained from a Questionnaire on Secondary School Biology," furnishing pertinent data on the quality of biology teaching in the high schools in various parts of the country. Copies of this report may be obtained from Dr. Riddle, chairman of the committee, Cold Spring Harbor, N. Y. Attendance, 32.

Officers for the year 1941: *President*, A. J. Carlson; *secretary*, Frank A. Brown, Jr.; *treasurer*, D. H. Wenrich; *members of the executive committee*, B. M. Duggar, A. P. Hitchens, George W. Hunter, III.

SECTION ON ANTHROPOLOGY (H) AND AFFILIATED  
SOCIETIES

(From reports by W. M. Krogman and Frederick R. Eggan)

Section H (W. M. Krogman, *secretary*) met jointly on Dec. 27 to 30 with the American Anthropological Association (Frederick R. Eggan, *secretary*), the Society for American Archaeology and the American Folklore Society. Over 250 persons were in attendance at the sessions and some 60 papers were presented. The general themes of the meeting centered around the relation of anthropology to present-day problems, interdisciplinary integration and problems of Latin America. To this end symposia were organized under the following titles: "Anthropology and Modern Life," "Physical Anthropology in Relation to Other Biological Sciences," "Problems of South American Anthropology" and "Cosmological Ideas of South American Peoples." In addition to the general sessions, Kirk Bryan, retiring chairman of Section E, repeated before Section H his address on "The Antiquity of Man in North America." Milo Hellman presented his reconstruction of the upper and lower dentition of *Pithecanthropus erectus*, showing a combination of anthropoid and hominid characters that demonstrated a tie-up with *Sinanthropus pekinensis*. The presidential address for the American Anthropological Association was delivered by Father J. M. Cooper on "The South American Marginal Cultures." It should appear shortly in the *American Anthropologist*. D. Oliver delivered an evening illustrated lecture on "Social Climbing in a Melanesian Plutocracy."

Anthropology, it was maintained by C. Kluckhohn, C. E. Guthe, G. Bateson, J. Provinse and E. Chapple, is of import not only in the study of primitive societies but also in the problems of our own society. Anthropology is now ready to say in effect, "We have learned certain basic principles of cultural integration and social interaction among primitive groups . . . these principles apply also to our more sophisticated culture."

Continuing the theme in the next session, M. J. Herskovits pointed out that the questioning of our cultural values which is taking place at present has been found to be a prelude to cultural demoralization among native peoples in contact with European cultures. R. F. Benedict reported that social morale has been found to be high in societies in which a considerable proportion of activities is devoted to community rather than individual ends. F. L. W. Richardson, Jr., illustrated the character of the choice which has to be made in rehabilitating blighted industrial areas. Margaret Mead pointed out the possi-

bilities of cooperation between students of culture and practitioners in the new field of psycho-somatic medicine through a recognition of the interrelations of culture, character formation and certain disease pictures such as those for asthma and hypertension.

Physical anthropology was discussed in the light of its major function, the study of the biology of man, by W. B. Tucker, M. F. Ashley-Montagu, W. W. Greulich, B. O. Hughes and W. M. Krogman. The study of human constitutional types is of some aid to the physician in the possible elucidation of various disease body-types. Physical anthropology, originally the handmaiden of anatomy, now stands in its own right as a biological science.

Papers on archeology stressed the filling in of pre-historical times or regional gaps and the development of techniques. R. Rainey discussed the Ipiutak Culture at Point Hope, Alaska, finding it to be of Asiatic origin and the earliest known settlement on the American Arctic coast. M. T. Newman and C. E. Snow reported on two prehistoric Amerind physical types from Alabama and traced their spread to adjacent areas. Mary Butler outlined the archeological sequence of Guatemala, while J. M. Longyear discussed pottery problems of the Maya. H. L. Movius, Jr., presented his findings on the Stone Age of Burma, pointing out that the Soan culture of India and the Choukoutienian of China must henceforth now be accepted as having affinities. Papers on methodology were offered by J. C. Harrington and R. H. Merrill, and V. J. Fewkes discussed technical and technological tasks and aims.

Interest in South America was reflected in two symposia and several papers. A symposium on "Problems of South American Anthropology" was presided over by J. P. Gillin, with W. C. Bennett, A. Métraux, G. D. Williams, E. C. Parsons and A. Ramos participating. They pointed out that despite the long period of European contact, native peoples have held their own in many portions of Latin America and make up a substantial block of the population, and hence they will be an important factor in future developments in those countries. In a symposium on "Cosmological Ideas of South American Peoples," with W. Lipkind as chairman, E. C. Parsons, B. Mishkin, I. Goldman, W. Lipkind, C. Wagley and R. Landes presented the results of their recent field work, which will appear in a forthcoming number of the *Journal of American Folklore*.

Papers were presented on such topics and problems as the motivation of warfare in aboriginal North America (M. W. Smith), the structure of Northwest Coast society (R. L. Olson), the various phrasings of "contranatural behavior in the Plains and Plateau (V.

F. Ray), the revival of the war ceremonies of the Winnebago as a result of participation in the last world war (L. Srole), the institution of the dearly loved child among the Gros Ventre (R. Flannery), changes in the class structure in Yucatan in recent times (A. T. Hansen), new data on Cubeo social organization (I. Goldman), land tenure among the Ibo of Nigeria (J. S. Harris), the blood feud pattern in the Caucasus Mountains (A. Grigolia), the factors affecting cultural change in Hawaii (E. G. Burrows) and the social organization of the ancient Hebrews (E. M. Loeb and I. Schapiro).

Papers on methods and techniques for the study of culture were presented by B. W. Aginsky, D. G. Mandelbaum, G. Herzog, E. G. Aginsky, W. Dennis, O. C. Stewart and H. Halpert.

#### SECTION ON PSYCHOLOGY (I)

(*From report by Leonard Carmichael*)

Section I held 7 sessions at which 44 papers were presented. The outstanding events of the meeting were the addresses of C. L. Hull, of Yale University, retiring vice-president for Section I, and M. R. Trabue, of Pennsylvania State College, also a psychologist and vice-president for the Section on Education (Q), both of which were delivered at the joint banquet of the two sections. The title of Dr. Hull's address was "The Role of Drive in Systematic Behavior Theory." The title of Dr. Trabue's address was "Educational Research and the Defense of Democracy."

The annual symposium of the section was devoted to the topic, "Psychology and the National Emergency," presented under the chairmanship of W. R. Miles. Among those participating in the symposium were W. F. Bingham, L. Carmichael, J. G. Jenkins, R. A. McFarland, M. B. McGraw, L. J. O'Rourke and C. L. Shartle. The symposium was a demonstration of the various fields in which professional psychologists are active in the national service in this period of emergency.

The annual section committee meeting was held under the chairmanship of K. M. Dallenbach, vice-president of the section. At this meeting the following officers were nominated to the council of the association for election: *Vice-president*, E. S. Conklin; *secretary*, A. W. Melton; *member of section committee*, E. Heidbreder.

The officers of the section wish to express to the Department of Psychology of the University of Pennsylvania their especial gratitude for the many services rendered the section at its meetings in Philadelphia. The psychologists present will long remember the Philadelphia meetings as an example of gracious hospitality. Attendance, about 300.

#### SECTION ON SOCIAL AND ECONOMIC SCIENCES (K) AFFILIATED SOCIETIES

(*From reports by E. P. Hutchinson, Cornelius Kruse, J. T. Johnson and D. L. Barr*)

Two symposia were presented by the section, one on "Human Ecology," in collaboration with the Ecological Society of America, and the other on "Science and Value," jointly with the American Philosophical Association.

In the former of these symposia the point of view of the physiologist was represented by F. H. Pike, who stressed the dependence of man on the stability of the natural environment. Russell Smith, advancing the thesis that a stable agriculture is a necessary condition for an enduring society, explained the need for adapting the type of agriculture to the physical and biological environment. This topic was further developed by Bruce L. Melvin, who spoke with special reference to the utilization of land in cities. The final paper, by E. C. Lindeman, presented the need for scientific study of human interrelations.

The second symposium concerned itself primarily with the question of the possibility of scientific study of social phenomena. The discussion was opened by Wilbur M. Urban, who stated several of the common fallacies and classified the types of material dealt with by the social sciences; Frank H. Knight emphasized the fundamental differences between the material of the social and the natural sciences; and Ralph Barton Perry maintained the susceptibility of evaluative material to scientific treatment and proposed his maxim of reflective agreement for the ranking of values. The discussion panel consisted of Harlow Shapley, Gregory Bateson, Morris R. Cohen and O. H. Taylor. Attendance, about 250.

The annual luncheon held by Pi Gamma Mu was attended by about 50 social science workers.

The Metric Association (J. T. Johnson, *president*, and D. L. Barr, *secretary*) held its 25th annual meeting at a dinner at the Bellevue-Stratford Hotel on Saturday, Dec. 28, 1940. Representatives from the Senior and Junior Academies of Science of Illinois were present.

The discussion centered around two points of interest: A movement to have future meetings in connection with the Senior and Junior Academies of Science; a proposed project to make a more direct contact with the South American countries in an effort towards Pan-American Standardization of Weights and Measures.

A memorial resolution was drafted and sent to Mrs. Howard Richards in appreciation of the work done by her husband, Howard Richards, who for the last 25 years gave so unsparingly of his services for the

advancement of metric weights and measures in the United States.

#### SECTION ON HISTORICAL AND PHILOLOGICAL SCIENCES (L)

(*From report by Joseph Mayer*)

The symposium on "A Scientific Basis for Ethics," participated in by R. W. Gerard, Frederick J. Teggart, Donald S. Mackay, S. J. Holmes, Chauncey D. Leake, George Sarton, Joseph Mayer, George de Santillana and Henry E. Sigerist, may be regarded as notable for several reasons. In it the views of specialists in diverse fields—history, biology, medicine, philosophy, sociology, economics, mathematics—were focused with a surprising unanimity of results, it being concluded not only that a scientific basis for ethics is possible but that a working hypothesis for further cooperative effort may even now be projected. Such a hypothesis was presented by the chairman in the following terms: "The probability of survival of a relationship between humans, or groups of humans, increases with the extent to which the relationship is mutually satisfying and beneficial." Put to a vote, this statement was unanimously approved. A surviving relationship between humans or groups of humans that is mutually satisfying and beneficial may be regarded as "good" or "valuable" or "ethical." Science, history, philosophy and the various social studies indicate what these surviving relationships are. The next problem is to ascertain to what extent they are mutually satisfying and beneficial.

Various approaches to an understanding of this further problem were also suggested in the symposium. It was pointed out that there are many human interests, drives, impulses, dispositions, etc., clamoring for satisfaction, some conflicting and others harmonious. The egoistic interests seem to be associated with the more primitive brain areas; the altruistic, with the higher cerebral areas. The higher human desires for security and advancement were stressed, as were also the importance of satisfactory adjustments between the individual and his environment, the need for utilizing the best available or attainable knowledge and the importance of purposive activity and further scientific experimentation in determining upon desirable, ethical goals both for the individual and for society.

Other important suggestions brought out in the symposium were the following: the criterion of harmonious adjustment or reflective agreement, freely arrived at, as distinguishing democratic ethics from totalitarian ethics; the disparity between fairly similar codes of ethics among educated *individuals* the world over and the diverse codes of contemporary national *states*; the need in developing ethical criteria for leaving room not only for *adjustments* in the light of existing knowledge but also for individual and social

progress in terms of what is still unknown about human nature (both with respect to consciously formulated ideals or desires and with respect to subconscious drives not yet adequately explored); the need for including criteria of truth and beauty in ethical standards, as well as of goodness or welfare. Attendance, about 50.

#### SECTION ON MEDICAL SCIENCES (N) AND AFFILIATED SOCIETIES

(*From reports by Malcolm H. Soule, Paul C. Kitchin, Glenn L. Jenkins and K. A. C. Elliott*)

The program of Section N (Malcolm H. Soule, *secretary*) which was devoted entirely to a symposium on "Human Malaria" as it exists in North America, Central America and the West Indies, was sponsored jointly by the American Society of Parasitologists, the American Society of Tropical Medicine and the National Malaria Committee. Two years ago when those charged with the development of the activities of the section selected this disease for treatment in a symposium there were no intimations that the culmination of their efforts would coincide with a national crisis in which the symposium would constitute an outstanding contribution to national defense, for the concentration of young men in military camps located in areas where malaria is indigenous presents a most important public health program. Thus the thorough review of our fundamental knowledge concerning the parasites, the distribution of known mosquito vectors, methods of diagnosis and treatment as well as techniques of control will be available to the various governmental agencies at this time of emergency.

The program was divided into 6 sessions which ran consecutively on the mornings and afternoons of Monday, Tuesday and Wednesday, the average attendance being 156. Forty-three papers, each limited to 5,000 words, were prepared in advance for publication in monograph form, the authors presenting a thorough but concise review of the available data pertaining to the specific subject assigned. On the program each contributor was allocated 15 minutes for the presentation of an abstract of his paper, leaving ample time for discussion from the floor.

The papers in the first session covered the history and distribution of malaria in the United States, Central America and the Caribbean region, the taxonomy of the malarial parasite, the morphology, life cycle and physiology of the species infecting humans, and the procedures for the laboratory identification of the organisms in the various stages of their life cycles in man and the mosquito. It was brought out that the disease is more widespread to-day than it was in 1930, 36 of the 48 states harboring infected patients in different proportions, such as a liberal sprinkling as far

north as Michigan, with real endemic areas in the southeast and south central states. The general morphology, classification and identification of the anopheline mosquitoes in these regions and factors influencing their infectivity formed the topics for the session on Monday afternoon.

The program on Tuesday morning covered the various types of human malaria, including black water fever, and closed with a consideration of the pathologic aspects of the disease. This program was followed in the afternoon by a group of 6 articles devoted to immunity and chemotherapy. It was brought out that the body responds to this disease as it does to any other microbial infection; the same cellular and humoral elements come into play, and recovery or death depends upon the ability of the tissues to provide these defensive mechanisms. In the discussion of the antimalarial drugs there was general agreement as to the efficacy of quinine, atebrin and plasmochin. However, the fact that the source of supply of the first of these is the Dutch East Indies and the last two are synthetic compounds of German origin raised the question of their availability as the supply on hand is used. Representatives of the concerns engaged in the importation or production of the drugs gave assurance of the ability of Dutch producers and American chemists to provide adequate quantities of all three.

The symposium came to a close on Wednesday with the presentation of data and criteria on treatment, control and eradication, the final paper being an "Anti-Malaria Program—National, State and Local." At the conclusion of the meeting representatives of the Army, Navy and Public Health Service unanimously agreed that the symposium, if made available in monograph form at once, would be of inestimable value to their personnel in the handling of the malaria problem.

The Subsection on Dentistry (Paul C. Kitchin, *secretary*) had a program consisting of a symposium on "Periodontal Disease," at which 6 papers were presented, one each on classification, pathology, nutritional relations, bacteriology, preventive treatment and curative treatment, and a session for the presentation of 14 papers on a variety of subjects.

The symposium brought out the following facts: The classification of periodontal disease is in a confused state because of lack of agreement regarding the causes. Causes are now recognized as local or systemic in origin, the majority of cases being due to causes that are local. The pathology of the periodontal tissues due to local causes is obviously an inflammatory process which, if untreated, leads to pocket formation and resorption of the supporting bone. Regarding the pathology due to systemic conditions, there is evidence that dietary factors can influence the tissues supporting the teeth, but the present state of knowledge suggests a general optimum diet rather than

emphasis on any single factor. The bacteriology of periodontal disease is apparently secondary to tissue damage from other causes. Individually most of the bacteria are harmless, but the mixed flora are pathogenic under favorable conditions. The important types seem to be anaerobes and some are difficult to cultivate for intensive study.

Early preventive treatment of local causes of inflammation, such as removing impinging deposits and fillings and unequal forces operating on individual teeth, produces the best results. Stimulation of the blood supply of the periodontal tissues through natural exercise and the use of the tooth brush is essential. Proper vitamin and mineral content of the diet during development is a preventive treatment against some of the possible systemic causes of periodontal disease. To date, curative treatment is almost wholly devoted to the elimination of local causes of tissue inflammation. Systemic causes are as yet too little known to be treated specifically. The older idea that the outstanding member of this group of periodontal diseases, pyorrhea, is incurable is contradicted by a large body of evidence to the contrary, especially when the condition is diagnosed early and treated thoroughly.

The remainder of the program consisted of 14 papers, one on physical properties of dental material and the others biological in nature. Abstracts of all the papers will be published in the *Journal of the American College of Dentists*. Attendance, about 75.

The Subsection on Pharmacy (Glenn L. Jenkins, *chairman*) held two sessions before which 18 papers were presented on a variety of subjects. Among the speakers presenting interesting results, W. C. Hueper showed that various pathological conditions result from the parenteral administration of macromolecular compounds, such as polyvinyl, alcohol, methyl cellulose and gum acacia. These substances disturb the equilibrium of the colloidal, macromolecular constituents of the blood and give rise to a reduction in the number of erythrocytes and in the amount of hemoglobin, persistent leucocytosis, increased conglutination speed, lengthened bleeding time, etc. Such symptoms are characteristic of several storage diseases, e.g., amyloidosis. Similar reactions of the blood in allergic and immunity states may have a macromolecular origin resulting from the presence of antigen-antibody complexes. N. Levin and W. H. Hartung described the synthesis of keto-hydroximic chlorides which are used as intermediates in the preparation of phenylethanolamine derivatives employed in therapy to increase blood pressure. H. Urist and G. L. Jenkins described the successful synthesis of 8-amino-quinoline-5-sulfonamide, the quinoline analog of sulfanilamide. Attendance, about 70.

The Research Council on Problems of Alcohol (no report received) held 7 sessions for the presentation

of a symposium on "Alcoholism" at which 43 papers were read. The general topics for the sessions were: (1) "Physiological and Chemical Considerations," (2) "Clinical Aspects," (3) "Neuropsychiatric Features," (4) "Treatment and Prevention," (5) "Social and Legal Problems," (6) "Social and Legal Problems" continued, (7) "Alcoholism—Some Social Considerations."

The Institute of Pennsylvania Hospital (K. A. C. Elliott reporting) held a "Discussion on Biochemistry and Physiology in Relation to Mental Disease." Under the chairmanship of Nolan D. C. Lewis, reports were presented by 8 speakers, D. W. Bronk, E. Gellhorn, H. E. Himwich, R. W. Gerard, L. F. Nims, E. Spiegel, E. B. Tietz and W. C. McCulloch.

The problems of mental activity and disease were discussed from widely different approaches. Studies on the effects of chemical and physical agents on the activity of nerve fibers and ganglionic synapses led to the conclusion that changing chemical environment and past nervous activity produce fluctuating behavior patterns in a nervous system which has a rigid structural pattern. Studies of the effects, on the sympathetic and parasympathetic nervous systems, of various treatments and drugs which influence psychoses suggested that mental derangement may be linked with maladjustment of the autonomic systems. That proper functioning of the brain is dependent upon normal oxygen utilization was emphasized by observations of the oxygen removed from the blood circulating in the brain under various conditions and by *in vitro* studies. Reports on changes in cell permeability and sudden alterations in pH of brain tissue during insulin hypoglycemia emphasized the physiological interest of insulin shock treatment. Discussion was lively and the attendance was about 150.

#### SECTION ON AGRICULTURE (O) AND AFFILIATED SOCIETIES

(*From reports by M. F. Morgan, Hardy L. Shirley, H. B. Tukey and William H. Martin*)

Section O (M. F. Morgan, *secretary*) held a joint symposium with Section C in celebration of the hundredth anniversary of the publication of Liebig's "Organic Chemistry in the Applications to Agriculture and Physiology."

The Society of American Foresters (Hardy L. Shirley, *reporting*) met jointly with the Ecological Society in a session at which 13 papers were presented, 6 of which dealt with succession in the northern hardwood forests and what it means to the forest manager. Studies carried out in Minnesota indicate that the factor chiefly responsible for determining whether maple-basswood will invade stands of spruce-balsam is the light intensity. Spruce-balsam stands,

whose canopies absorb 95 per cent. of the light, have no maple or basswood seedlings underneath, whereas those absorbing less light are almost certain to be invaded by hardwoods.

Studies of hardwood forests of Michigan and western Pennsylvania provided valuable clues to the rôle of intolerants in the virgin forest. These reports were amplified by a study of succession in New Hampshire following destruction of forests by the 1938 hurricane. All four studies indicate that windstorms and other important catastrophes play an important part in determining the composition of virgin forests. Far from being static, forests reach stages of senescence when they contain maximum number of large trees, which, being mutually dependent, tend to die out or windthrow in groups, thereby creating sufficiently large openings to encourage such relatively intolerant species as black cherry, white pine, yellow birch and ash. Windstorms, glaze storms, insect outbreaks, drought and other natural agents have all operated in the past to produce major changes in the virgin forest and may be expected to mold also managed forests.

The Biological Survey told of new methods of controlling locally the Canadian porcupine that present no hazard whatever to other animal occupants of the forest. As much as 50 per cent. of the leaf area may be removed in pruning lower branches from young red pine trees growing in plantations without causing any detectable change in height growth or diameter growth, but removal of 75 per cent. or more of the leaf area caused pronounced decrease in growth for a period of more than five years.

The heat conductivity method of measuring moisture in forest soils, as demonstrated by R. F. Chandler, Jr., proved to be rapid and sensitive to small changes in moisture and to be especially valuable in following moisture changes under different types of vegetative cover.

The American Society for Horticultural Science (H. B. Tukey, *secretary-treasurer*) organized programs on particular problems that are always of interest as indicating the trend of horticultural research throughout the country. This year, on a 3-day program, there were four sessions dealing with tree fruit problems; five sessions dealing with vegetable crops, including a joint session with the Potato Association of America; four sessions on floriculture and ornamental horticulture, including a joint session with the American Phytopathological Society; and single sessions on blueberry problems, on small fruits and on storage and processing of horticultural products.

The broad interest of the society and its usefulness in drawing together various groups so as to pool their

knowledge and resources upon special crop problems is again indicated by the symposia and joint sessions in which the society participated. Among these are the joint session on "Present Concepts of Ion Availability in Plant Nutrition," participated in by the American Society of Plant Physiology and the Physiology Section of the Botanical Society of America; and "Theoretical and Practical Aspects of Polyploidy in Crop-Plants," in which the special problems called for round-table discussions on educational methods, on nomenclature and varieties, in which Dr. Liberty Hyde Bailey participated, on experimental design and on blueberry culture.

The banquet and social evening, which has always been a feature of the society, was in the hands of the Pennsylvania group of horticultural workers under the chairmanship of W. B. Mack, of Pennsylvania State College, who introduced Mr. Wister to tell of the contributions which Philadelphia and Pennsylvania have made to the development of horticulture in America, and provided entertainment by a Pennsylvania Dutch group represented as characteristic of a section of the state.

L. H. MacDaniels, of Cornell University, president of the society, in his address entitled "Social Implications of the Scientific Method" expressed confidence in the value of the scientific method as now practised by research workers, and called upon scientists to recognize this fact and to take part in applying this method to social problems.

Due to the greatly increased size of the published proceedings of the society, which last year attained 1,152 pages, it was voted to publish the proceedings in two volumes in 1941, and to include in it papers presented before sectional groups of the society. F. C. Bradford was elected president for 1941. Attendance, about 475.

The Potato Association of America (William H. Martin, *secretary-treasurer*) held its 27th annual meeting on Dec. 30, 31. Joint sessions were held with the American Society for Horticultural Science and the American Phytopathological Society. All meetings were well attended. A symposium on Bacterial Ring Rot, led by T. P. Dykstra, attracted considerable interest. It was brought out that this is one of the most serious diseases confronting the potato industry, and plans were made for a cooperative effort on the part of all plant pathologists interested in the potato crop to develop ways and means for its control.

#### SECTION ON EDUCATION (Q)

(*From report by H. H. Remmers, secretary*)

Section Q held a joint dinner with the Section on Psychology (I) at which M. R. Trabue, vice-president for Section Q, delivered an address on "Educa-

tional Research and the Defense of Democracy," and at which C. L. Hull, vice-president for Section I, delivered an address on "The Rôle of Drive in Systematic Behavior." In addition, the section held 4 sessions at which 27 papers were presented.

The general theme for the first session was "Conservation Education," consisting of papers on training of teachers, adult education and conservation of human resources. William A. Sutton presided and Paul B. Sears summarized the discussion. The second session consisted of two sections, the first hearing papers on experimental problems and the second, papers concerned with broad educational problems. Percival M. Symonds presided at the former and Paul A. Witty at the latter.

At the final session, G. M. Ruch, chairman, 7 papers were presented. Two reports were on testing, one in mathematics and the other in diagnostic and remedial reading; one was on the effects of schools upon a community and one was on the educational autonomy of NYA in New Hampshire.

#### GENERAL SCIENTIFIC ORGANIZATIONS

(*From reports by Edward Ellery, Deborah M. Russell, Lawrence R. Guild and Nina E. Gray*)

The 41st Annual Convention of the Society of the Sigma Xi (Edward Ellery, *secretary*) met at 4:00 P.M. on December 30, with 59 chapters and 14 clubs represented by delegations of one to three members. Charters for chapters of Sigma Xi were granted to Bryn Mawr College and Oberlin College. The Committee on Lectureships reported the sixth series of national lectureships, with engagements scheduled at 50 institutions during the next few weeks.

Clarence E. Davies was elected a member of the Executive Committee for the ensuing five-year term to succeed R. A. Gortner, whose term of office had expired. James R. Angell was elected a member of the Alumni Committee to replace Mr. Davies during the remainder of his unexpired term. Miss A. Elizabeth Adams was elected a member of the Alumni Committee for the ensuing five-year term to succeed Frederick B. Utley, whose term had expired. Announcement was made of the publication of Volume II of "Science in Progress," containing the 1939 and 1940 lecture series.

The 19th annual Sigma Xi lecture, under the joint auspices of the A. A. A. S. and Sigma Xi, was delivered to a large audience by Dr. A. J. Carlson, of the University of Chicago. His subject was "Science versus Life." Attendance, about 280.

United Chapters of Phi Beta Kappa (William A. Shimer, *secretary*) chose as its speaker for the sixth of the annual lectures the society sponsors, Mr.

Walter Lippmann. He delivered a thoughtful and critical address on education. Attendance, about 650.

The American Science Teachers Association (Deborah M. Russell, *secretary*) held a joint session with the American Association of Physics Teachers, a luncheon at which A. F. Blakeslee delivered an address and demonstration on "Taste and Smell" and a symposium on "The Place of Science in General Education." Total attendance, about 350.

The American Nature Study Society (no report received) held 5 sessions at which 22 papers were presented, an evening social session, a breakfast and a trip through Bartram Gardens.

The Honor Society of Phi Kappa Phi (Lawrence R. Guild, *secretary*), although it holds meetings only biennially on odd-numbered years, provided a "general session" in the address of Dr. Edmund Ezra Day, president of Cornell University, on "The Discipline of Free Men." This fine address was given nationwide publicity, in an abbreviated form, over the red network of the National Broadcasting Company and aroused a great deal of interest. It will be published in the Phi Kappa Phi journal.

Gamma Alpha Graduate Scientific Fraternity, Sigma Delta Epsilon, graduate women's fraternity, and Pi Gamma Mu, national social science society, and Catholic Round Table of Science held business meetings and luncheons. At the luncheon of Sigma Delta Epsilon, Bertha Van Hoosen delivered an address on "Medical Women's Library."

The American Association of Scientific Workers presented a two-session symposium on "The Scientist and American Democracy," the first session under the chairmanship of Ralph W. Gerard. A. J. Carlson delivered the opening address on "The Scientist's Concept of a Democratic Society." The remainder of the session was on the general subject, "The Scientist and Technocracy," the contributors to which were A. C. Lane, C. E. Kellogg and Walter Rautenstrauch. Arthur H. Compton presided at the second session, the introduction to which was an address on "The Scientist and American Democracy" by Kirtley F. Mather. The general subject for the next three papers was "The Scientist and Social Problems," which were by Thomas F. McSweeney, John P. Peters and Donald E. Montgomery. K. A. C. Elliott and Leonard Carmichael presented papers on different aspects of "The Preservation of Science." The society was admitted as an associated society of the A. A. A. S. by vote of the council at the meeting.

The National Association of Science Writers presented, on Sunday morning, a symposium on "Science Reporting in the World Crisis." The first item on the program was an excellent address by the incoming

president of the organization, Gobind Behari Lal, representative of the International News Service. Other participants from among the science writers were William Laurence (*New York Times*), Howard Blakeslee (Associated Press), David Dietz (Scripps Howard Papers), John O'Neill (*New York Herald Tribune*), Watson Davis (Science Service), Thomas Henry (*Washington Evening Star*), Steven Spencer (*Philadelphia Evening Bulletin*), and Robert D. Potter (*American Weekly*). Albert F. Blakeslee, president of A. A. A. S., and Walter B. Cannon, retiring president, both spoke, as well as Edwin Grant Conklin and others. The symposium was a high-grade contribution to an important aspect of science.

#### TREASURER'S REPORT

<i>Balance Sheet—Assets at September 30, 1940</i>	
Securities and mortgages .....	\$221,530.50
Cash awaiting investment .....	45,879.37
Cash for current needs .....	15,084.06

Total assets .....	\$282,493.93
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#### *Balance Sheet—Liabilities at September 30, 1940*

Endowment—for research (1) .....	\$117,311.45
Endowment—for general purposes (2) .....	95,988.38
Endowment—dues for emeritus life members (3) .....	5,000.00
Endowment—dues for emeritus annual members (4) .....	500.00
Reserve fund .....	35,699.92
Permanent Secretary's fund .....	12,910.12
Prize fund .....	2,000.00
Grants to affiliated academies .....	710.00
Accumulated income, for appropriation in 1941 .....	12,374.06

Total liabilities .....	\$282,493.93
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(1) Richard T. Colburn fund, \$87,186.45; fees of deceased sustaining members, \$7,000; fees of deceased life members, \$19,600; A. G. Stillhamer fund, \$3,525.

(2) W. Hudson Stephens fund, \$4,381.21; Michael P. Rich fund, \$10,000; Hector E. Maiben fund, \$31,448.17; Friends of the Association fund, \$3,559; Jennie M. Arms-Sheldon fund, \$1,000; fees of living life members, \$45,600.

(3) Jane M. Smith fund, \$5,000.

(4) Luella A. Owen fund, \$500.

#### CASH STATEMENT

##### *Receipts*

Balance, September 30, 1939 .....	\$ 29,503.50
Life membership fees .....	1,100.00
Reversion of grant .....	50.00
Redemption of securities .....	48,874.55
Estate of Jennie M. Arms-Sheldon .....	1,000.00
Income from research fund .....	3,988.32
Income from general fund .....	3,301.91
Income from reserve fund .....	1,272.76
Income from Permanent Secretary's current funds .....	429.98
Income from Jane M. Smith fund .....	172.26
Income from Luella A. Owen fund .....	17.23

Total receipts .....	\$ 89,710.51
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##### *Disbursements*

Securities purchased .....	\$ 19,818.75
Purchased interest, net .....	44.64
Grants for aid of research .....	2,191.09
Grants to affiliated academies .....	2,275.00
Annual prize—I. I. Rabi .....	1,000.00
For emeritus life members .....	500.00
For emeritus annual members .....	17.50
Life members' journal subscriptions .....	1,647.00
Fifty-year members' journal subscriptions .....	84.00
Maiben lecture—Edwin P. Hubble .....	200.00
Special lecture at Columbus—J. S. Huxley .....	725.00
Collection charges and safe deposit box .....	244.10

Cash on hand, September 30, 1940 .....	\$ 28,747.08
	60,963.43

Total disbursements .....	\$ 89,710.51
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## PERMANENT SECRETARY'S REPORT

(Period October 1, 1939, to September 30, 1940)

## Receipts

Annual dues and fees .....	\$ 97,968.84
Life membership fees .....	1,100.00
Sales of publications .....	26,884.41
Miscellaneous receipts .....	2,808.04
Special journal subscriptions .....	2,682.00
Registration fees—Columbus meeting .....	2,588.00
Registration fees—Seattle meeting .....	673.00
Receipts from exhibitors—Columbus meeting .....	2,962.75
Advance receipts from exhibitors—Philadelphia meeting .....	1,626.25
Refund of expenses, <i>Scientific Monthly</i> .....	3,530.06
Gibson Island Conference (Section C) .....	924.00
General fund—Research Council on Problems of Alcohol .....	3,925.94
Theobald Smith prize—Eli Lilly .....	1,150.00
 Total receipts .....	 <b>\$148,823.29</b>
Cash in banks, September 30, 1939 .....	19,602.90
Reserve in Treasurer's hands .....	12,480.14
 Total receipts .....	 <b>\$180,906.33</b>
 <i>Disbursements</i>	
Subscriptions to journals, including foreign postage .....	\$ 60,378.07
Allowances to Pacific and Southwestern Divisions .....	2,482.00
Expenses of Washington office .....	24,821.66
Expenses of General Secretary .....	372.25
Expenses of Treasurer .....	200.00
Circularizing for new members .....	1,034.98
General and travel expenses—Columbus meeting .....	3,627.04
Expenses of exhibition—Columbus meeting .....	2,642.47
Expenses of press service—Columbus meeting .....	314.05
General and travel expenses—Seattle meeting .....	1,574.69
Expenses of press service—Seattle meeting .....	35.99
Preliminary expenses—Philadelphia meeting .....	1,294.73
Printing symposia .....	13,053.64
Life membership fees to Treasurer .....	1,100.00
Transfer of gift from estate of Jennie M. Arms-Sheldon to Treasurer .....	1,000.00
Miscellaneous expense .....	1,090.85
Special journal subscriptions .....	2,688.00
<i>Scientific Monthly</i> expenses .....	2,589.57
Committee on Place of Science in Education .....	208.30
Committee on Improvement of Science Education on the College Level .....	592.43
Gibson Island Conference (Section C) .....	695.26
Theobald Smith Prize—Eli Lilly Co. .....	1,150.00
Research Council on Problems of Alcohol—Project No. 1 and General expenses .....	23,076.52
 Total expenditures .....	 <b>\$146,022.50</b>
Cash in banks .....	21,973.71
Cash in Treasurer's hands .....	12,910.12
 Total disbursements .....	 <b>\$180,906.33</b>

## MINUTES OF MEETING OF THE COUNCIL

(From report by Otis W. Caldwell)

The council held two sessions, one at 2 p.m. on Friday, Dec. 27, 1940, at which the registered attendance was 62; the other, at 9:15 a.m. on Tuesday, Dec. 31, at which the registered attendance was 60. The following actions were taken:

1. The Eastern Psychological Association and the Institute of Mathematical Statistics were admitted as "affiliated" societies of the association; the American Association of Scientific Workers, the American Malacological Union and the Union of Biological Societies were admitted as "associated" societies of the association. (The affiliated and associated societies now number 179.)

2. The election of members to fellowship were distributed among the sections as follows: Mathematics, 22; Physics, 45; Chemistry, 152; Astronomy, 13; Geology and Geography, 0; Zoological Sciences, 0; Botanical Sciences, 19; Anthropology, 14; Psychol-

ogy, 16; Social and Economic Sciences, 0; Historical and Philological Sciences, 0; Engineering, 0; Medical Sciences, 100; Subsection on Dentistry, 6; Subsection on Pharmacy, 38; Agriculture, 30; Education, 70.

3. The names of all officers elected were published in SCIENCE, Jan. 10 issue, pages 35, 36.

4. It was "resolved that a committee be elected for a term of two years and charged with the responsibility of correlating the many diverse interests in this larger question (interrelations of Science and Society) through the organization of symposia, the presentation of papers and the continuation of critical discussion at future meetings of the association whenever feasible, with the understanding that every effort will be made to enlist the interest and cooperation of the different professional groups and organizations that are concerned with this problem with a view to bringing these various contributions to bear upon this major problem of our society, and be it

"Further resolved, that the association, acting through its appropriate officers, give every encouragement and sanction to the development of these programs in order that the prestige and authority of this scientific organization may be asserted fully in support of this effort to make both the scientists and the lay citizens of the country increasingly aware not only of the benefits conferred by science but of the many large and baffling new problems which the advance of science is creating for the progressive solution of this problem for which the scientists themselves must assume an increasing responsibility."

The following committee was elected: George Reid Andrews, Walter B. Cannon, Lawrence K. Frank, chairman, Frank B. Jewett, Robert S. Lynd, Kirtley F. Mather, C. E. Merriam, F. R. Moulton, *ex officio*, Paul B. Sears and Harold C. Urey.

5. The following members were elected "emeritus life members" under the provisions of the Jane M. Smith Fund: Alexander P. Anderson, M96F99; Melville T. Cook, M96F02; Henry Winston Harper, M96F99; Walter L. Jennings, M96F98; Benjamin F. Kingsbury, M96F99, and Clayton Halsey Sharp, M96F97.

6. The following members were elected "emeritus annual members" under the Luella A. Owen Fund: Morton J. Elrod, M01F01, and Frederick C. Waite, M01F06.

7. President Blakeslee presented a paper on the possible functions of the association and its possible services to science, including statistics regarding its membership and regarding the circulations of SCIENCE and *The Scientific Monthly*. Following this paper a resolution was passed "that the president of the A. A. A. S. appoint a committee to give careful and sympathetic study of the problems of the journals of the association, including existing contracts, edi-

torial management and the whole policy of publishing journals from the association's standpoint." At its second session the council voted that "the committee shall be appointed by the incoming president of the A. A. A. S. in consultation with the incoming Executive Committee of the A. A. A. S." (A copy of the indenture and contract entered into between Dr. and Mrs. J. McKeen Cattell and the association on December 12, 1938, together with copies of the resolution of the Executive Committee authorizing and directing the officers of the association to execute the contract on behalf of the association and of the resolution of the council approving the action of the Executive Committee and of the officers will be published in the next issue of SCIENCE.)

8. On motion of Leonard Carmichael the following resolution was passed:

"The Council of the American Association for the Advancement of Science expresses to the National Resources Planning Board and the United States Civil Service Commission its unqualified approval of the fundamental idea of the National Roster of Scientific and Specialized Personnel both as a defense and as a peacetime project. It is the hope of the Council of the American Association for the Advancement of Science that the Roster may be continued by the National Government for at least a five-year trial period."

9. On motion of Harlan T. Stetson and with the support of Richard M. Field, the following resolution was passed:

"WHEREAS, At this time of international stress the American Association for the Advancement of Science, at its one hundred and seventh meeting convening in Philadelphia, a city sacred to the foundation of our republic, realizing the share of responsibility of scientific men for the general welfare of free peoples, seeks the cooperation of their English speaking colleagues;

"Be it resolved, That the American Association for the Advancement of Science wants the cooperation of the British Association for the Advancement of Science in attempting to formulate, upon scientific principles, an international charter of democracy.

"Be it also resolved, That a copy of this resolution be immediately sent (cabled) to the British Association for the Advancement of Science; and to all presidents of the affiliated societies of this association, and sent to the editor of SCIENCE for publication."

#### REPORT OF THE COMMITTEE ON GRANTS

Upon recommendation of the Committee on Grants, consisting of Drs. A. F. Woods, *chairman*, Vincent du Vigneaud, T. R. Hogness, Dayton C. Miller, G. H. Parker, S. A. Mitchell, J. T. Buchholz and A. T. Pof-

fenberger, the council of the association awarded grants-in-aid amounting to \$2,121.45 as follows:

Harry Gregory Albaum, for a study of the relation between the four-carbon acid respiratory system and the growth of oat seedlings, \$200.

Henry B. Bull, to estimate quantitatively the protein fractions present in a prepared protein and to isolate the various fractions from a mixture of native proteins, \$150.

Francis Gaynor Evans, for a study of the morphology and functional evolution of the vertebrate hand, \$75.

Arthur Charles Giese, for a study of the effect of ultraviolet radiation on respiration of microorganisms (luminous bacteria, yeasts, etc.), \$50.

George Glockler, for a study of the fundamental frequencies of the halomethanes by the use of Raman spectra, \$100.

Walton C. Gregory, for a study of the factors responsible for the specialized mitoses of meiosis by growing anthers of flowering plants in nutrient solution with the aim of throwing more light on the physiological basis for genetic segregation, \$25.

W. Heinlen Hall, for a study of the influence of temperature on the efficiency of separation of the hydrogen isotopes in certain chemical reactions, \$70.

Rachel E. Hoffstadt, for a study of the factors which influence the growth of viruses with special references to the changes in pH and CO<sub>2</sub> contents of the yolk and albumin of developing chick and duck embryos, when infected with the virus of infectious myxoma, \$150.

Peter V. Karpovich, for a study of the effect of smoking upon muscular performance, \$110.

Earl R. Loew, for a study on the healing of experimental gastric wounds of the rat during pregnancy and during treatment with urine extracts, \$50.

Eugene Pleasants Odum, for the continuation of work with a specially designed apparatus, the Cardiovibrometer, which measures heart rate, breathing rate, muscle tremors and other bodily activities of animals, \$225.

Carl G. Vinson, for a study of the organic chemical analysis of the virus of mosaic disease of tobacco, \$200.

D. E. Green, for a study of the isolation of oxidation and phosphorylation enzymes, \$100.

Charles E. Lane, for a study of the physiology of intraocular ovarian transplants in the rabbit—the formation and function of corpora lutea in these transplants and the influence of various hormones on their persistence, \$100.

E. P. Mumford and G. D. Hale Carpenter, for a study of faunal distribution with particular reference to oceanic islands, \$200.

Samuel R. M. Reynolds, for the determination of the concentration of glycogen, and of the glycogenolytic activity of bloods of normal subjects and in subjects with certain endocrine dyscrasias (including diabetes mellitus and obesity), \$45.

H. W. Straley, III, for a geomagnetic survey of the coastal plain of the Atlantic, particularly in the Carolinas, \$150.

J. Clark Streett, Jr., for a study on experimental embryology—the organization of the amphibian egg, \$121.45.